# *Regional Phase II Workshop*

## Washington State

## Long-Term Air Transportation Study (LATS)

***Presented at:***

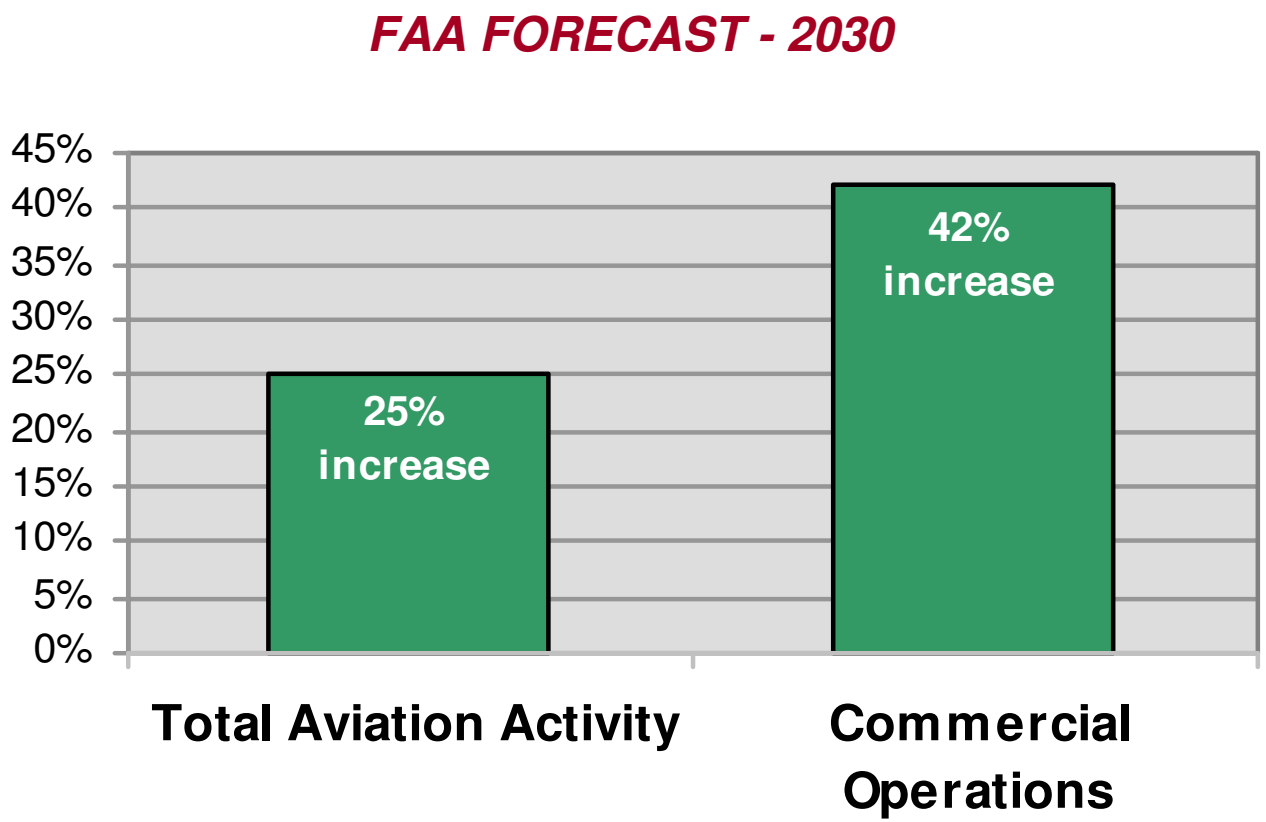
**Museum of Flight (May 1st)**

**Wenatchee Convention Center (May 2nd)**

# Regional Meeting Objectives

- Review purpose of LATS
- Provide a briefing on Phase II project efforts
- Present Phase III overview
- Obtain feedback on results and presentation materials
- Identify items for follow-up and further discussion

# Is the State Prepared?




Source: _____

# Critical Issues

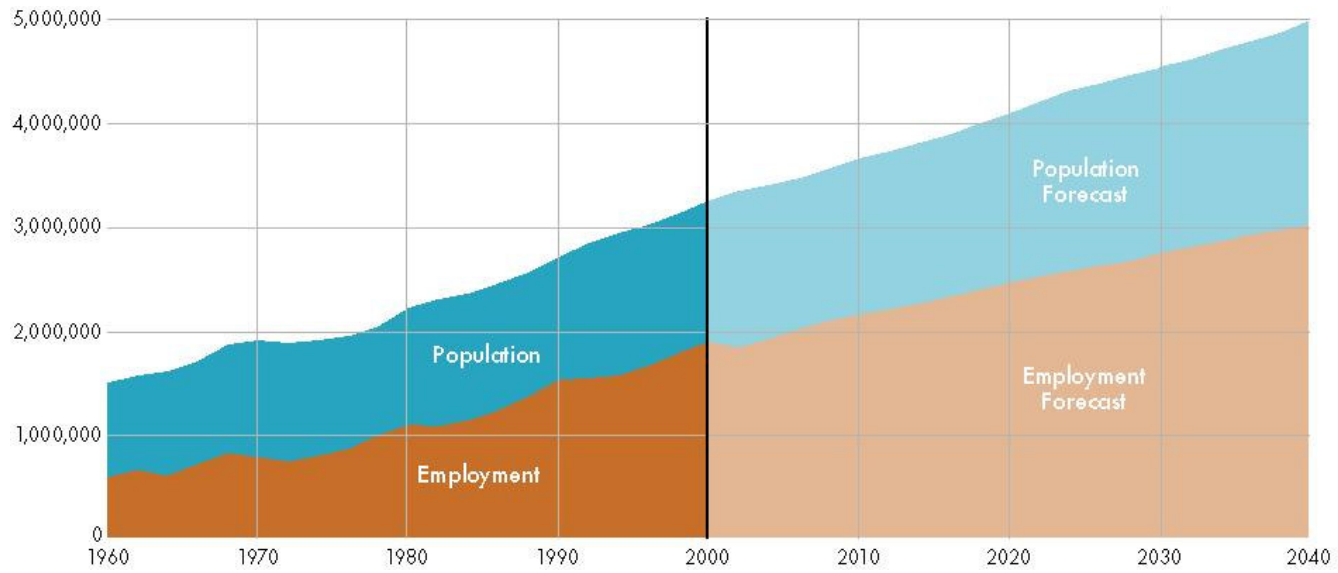
- Funding opportunities are tightening as fuel tax revenues and federal budgets decline
- FAA forecasts predict significant increases and changes in aviation activity by 2030
- Washington lacks a statewide strategy to ensure adequate aviation capacity to accommodate predicted growth
- Long-range planning is needed now to make smart, targeted investments and to protect our aviation system for the future

# Statewide Growth

- **WA population has doubled in the last 30 years and an additional 2 million are expected by 2025 (US Census)**
- **Significant growth expected in regions:**
  - Puget Sound: 1 million increase
  - SW Washington: 270,000 increase
  - Spokane Area: 240,000 increase
  - Tri-Cities Area: 100,000 increase
- **Historically, increases in population result in increased aviation activity for business, freight, emergency access, public safety and recreation**

# Puget Sound

- **Sea-Tac - may reach capacity by 2021**
- **Boeing Field – operations expected to increase by 50% over next 20 years**
- **Paine Field –GA operations to increase by 80,000 in next 20 years**




***Puget Sound forecasts pop. increase of 1 million in 20 years***

Source: Airport Records?

# Southwest Washington


PORT OF PORTLAND
Possibility. In every direction.™

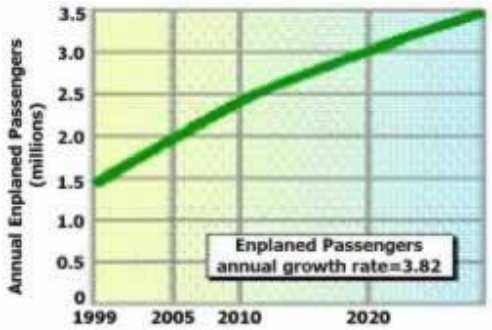
- 10-year FAA study revealed need for new regional airport in southwest Washington
- One of the region's public-use airports is closing
- Pearson Field operations constricted by structures
- PDX anticipates need for a 3rd parallel runway after 2020

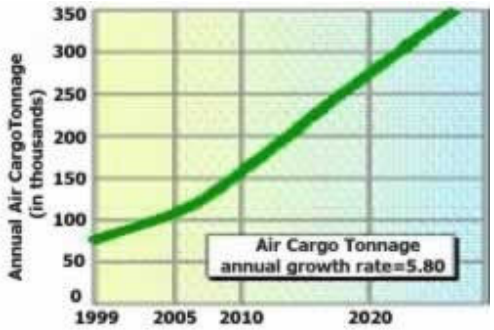
Source: Airport Records?

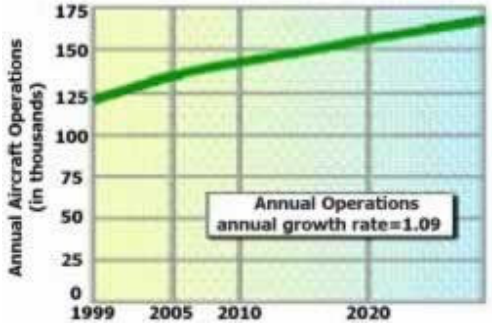
# Spokane

***In 20 years:***

- **Enplaned passengers will nearly double**
- **Even more dramatic increase expected for air cargo**
- **Demand for larger capacity aircraft (i.e. regional and business jets**





Source: Airport Records – **Can GEG provide something more recent than 1999?**

# Tri-Cities

A Port of Pasco Facility

Tri-Cities Airport

***Forecasted increases in 2020:***

- **Enplaned passengers – +137,000**
- **Annual Operations – +27,000**
- **General aviation expects most growth**

Source: Airport Records?

# Discussion Questions for Consideration

- What are the key issues/implications for local communities, given the findings from Phases I and II?
- What are the implications for long-term state aviation planning?
- Do you have suggestions as we continue to complete the Phase II technical study?
- Suggestions/Feedback for Phase III Outreach?

# Looming Challenges Require a Statewide Strategy

- **Fluctuation in fuel tax revenues and federal budgets create uncertainty for future funding.**
- **FAA forecasts predict significant increases and changes in aviation activity by 2030.**
- **Washington lacks a statewide strategy to ensure adequate aviation capacity to accommodate predicted growth.**
- **Long-range planning is needed now to support strategic investments and to protect our aviation system for the future.**

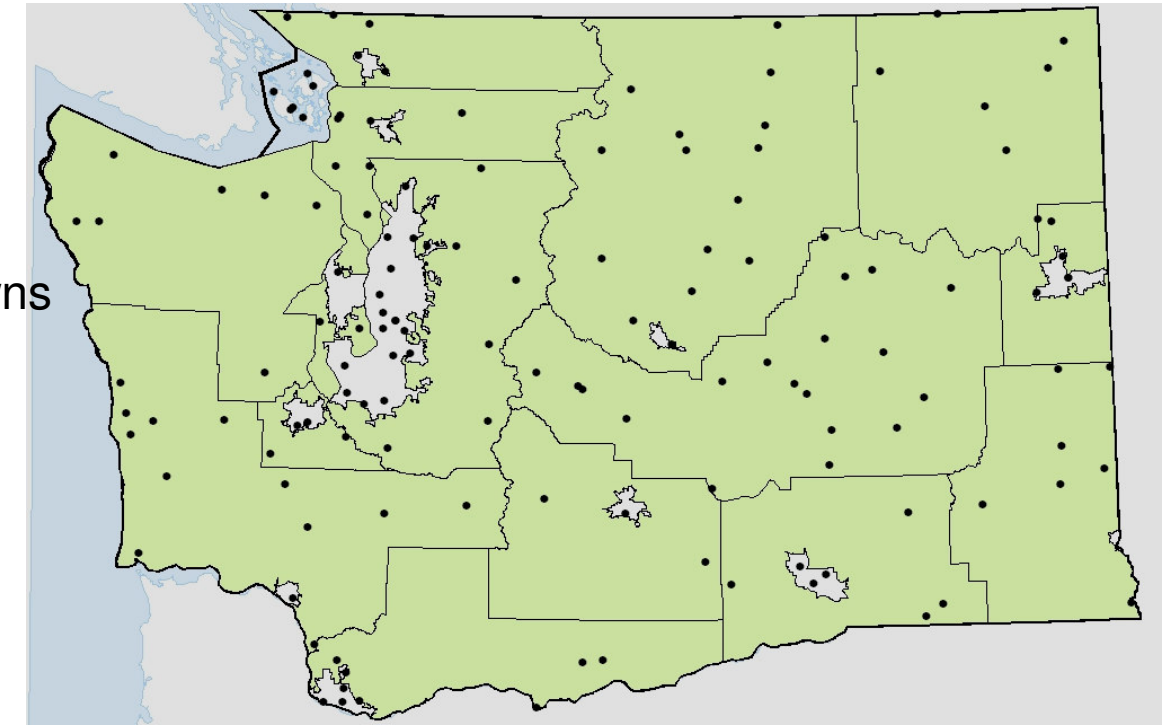
# Three Phase Approach to LATS

| | | | |
|---|---|---|---|
| **PHASE I** | **WHAT WE HAVE.** | **Airport inventory, capacity and airspace assessment.** | **Completed September 2006.** |
| **PHASE II** | **WHAT WE NEED.** | **25 year activity forecast (141 airports), market analyses at commercial service airports, air cargo forecast, high speed passenger rail assessment; future capacity analysis, summarize system Requirement.** | **To be completed by July 2007.** |
| **PHASE III** | **HOW WE MEET THE NEEDS** | **Governor appointed planning council to provide recommendations for future airport strategy and investment statewide.** | **To be completed by July 2009.** |

# Air Transportation in Washington State

**140 public use airports**

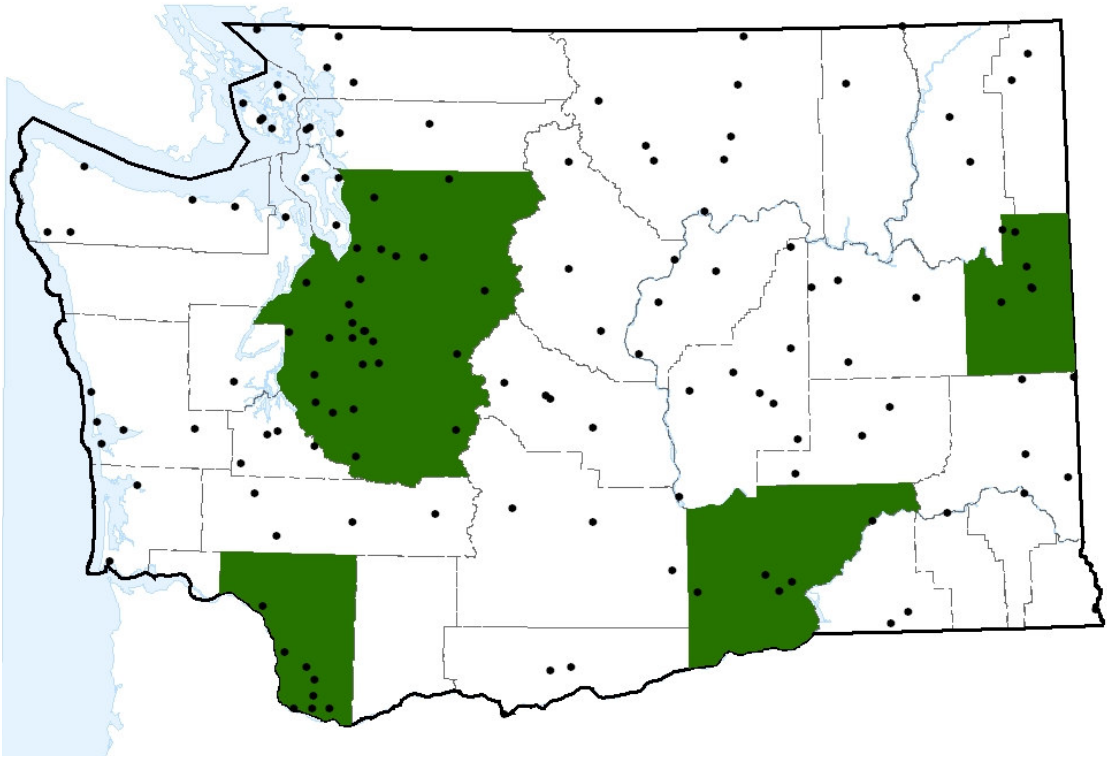
- 10 owned by counties
- 44 owned by cities and towns
- 33 owned by port districts
- 5 owned jointly
- 31 privately owned



**66 airports** included in National Plan of Integrated Airport Systems (NPIAS)

**109 airports** eligible for State Airport Aid Grant Program funding

# Special Emphasis Regions



- Puget Sound
- Southwest WA
- Spokane
- Tri-Cities

Designated by the legislature in ESSB 5121.

Focus on commercial aviation activity.

# Phase I: What Did We Learn about Existing Capacity?

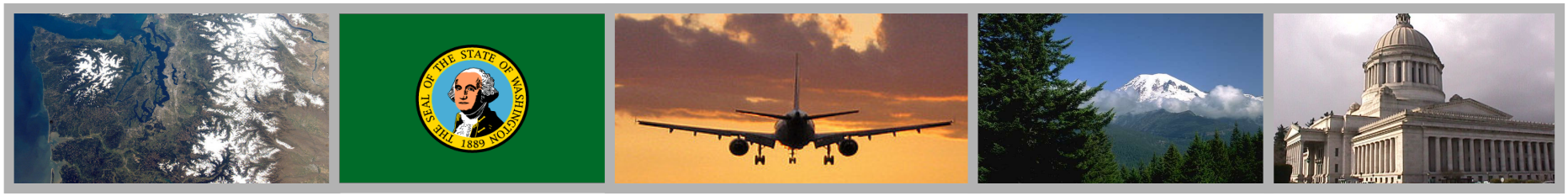
- Passenger Capacity
- Air Cargo Capacity
- Aircraft Storage Capacity
- Airport Operations Capacity

# Phase I: What is the Proposed State Airport Classifications?

| | |
|---|---|
| Commercial Service | **Provide Scheduled Service**<br><br>**Market-Driven Service Area** |
| Regional Service | **Serve a Large - Medium Market Area**<br><br>**Accommodate All GA Aircraft, Facilities and Services** |
| Local Community | **Serve Small or Medium Size Communities**<br><br>**May Include Air Cargo** |
| Recreation / Remote | **Serve Recreation Communities or Remote Locations.**<br><br>**May Be Strategically Located for Emergency Access** |
| Seaplane Base | **Serve Amphibious and Float-Equipped Aircraft**<br><br>**Commercial Facilities Are Not Included** |

# Phase II: What Have We Learned So Far?

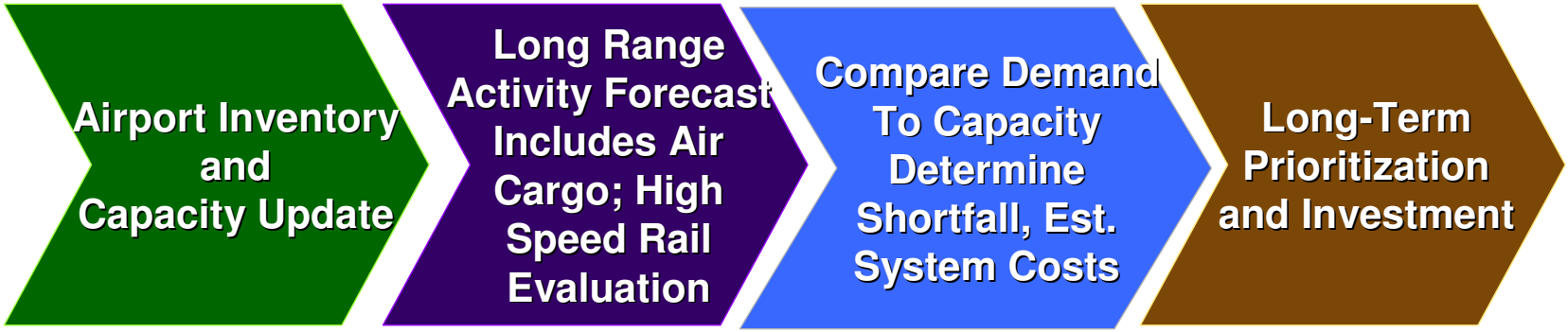
- **State and National Trends Point to Significant Changes and Growth in Aviation Activity in the Next 25 Years, Including**
  - Commercial aviation
  - General aviation
  - Air cargo activity
- Options for addressing capacity shortfalls through investment in rail transportation



## *Regional Phase II Workshops*

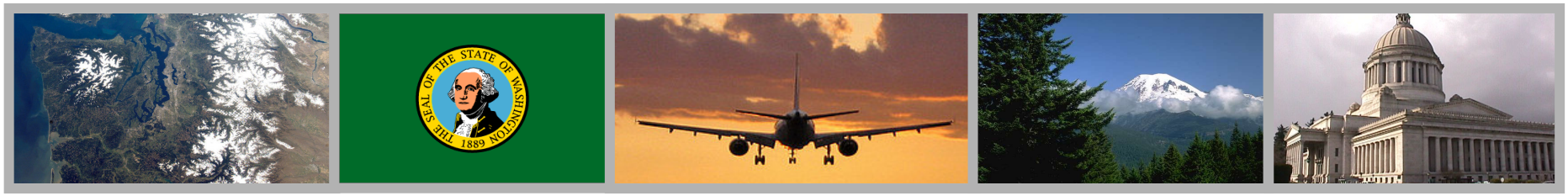
# LATS OVERVIEW

# System Plan Overview – Phase I and II




**Public Information and Outreach**

**May, 2006 – July 1, 2007**



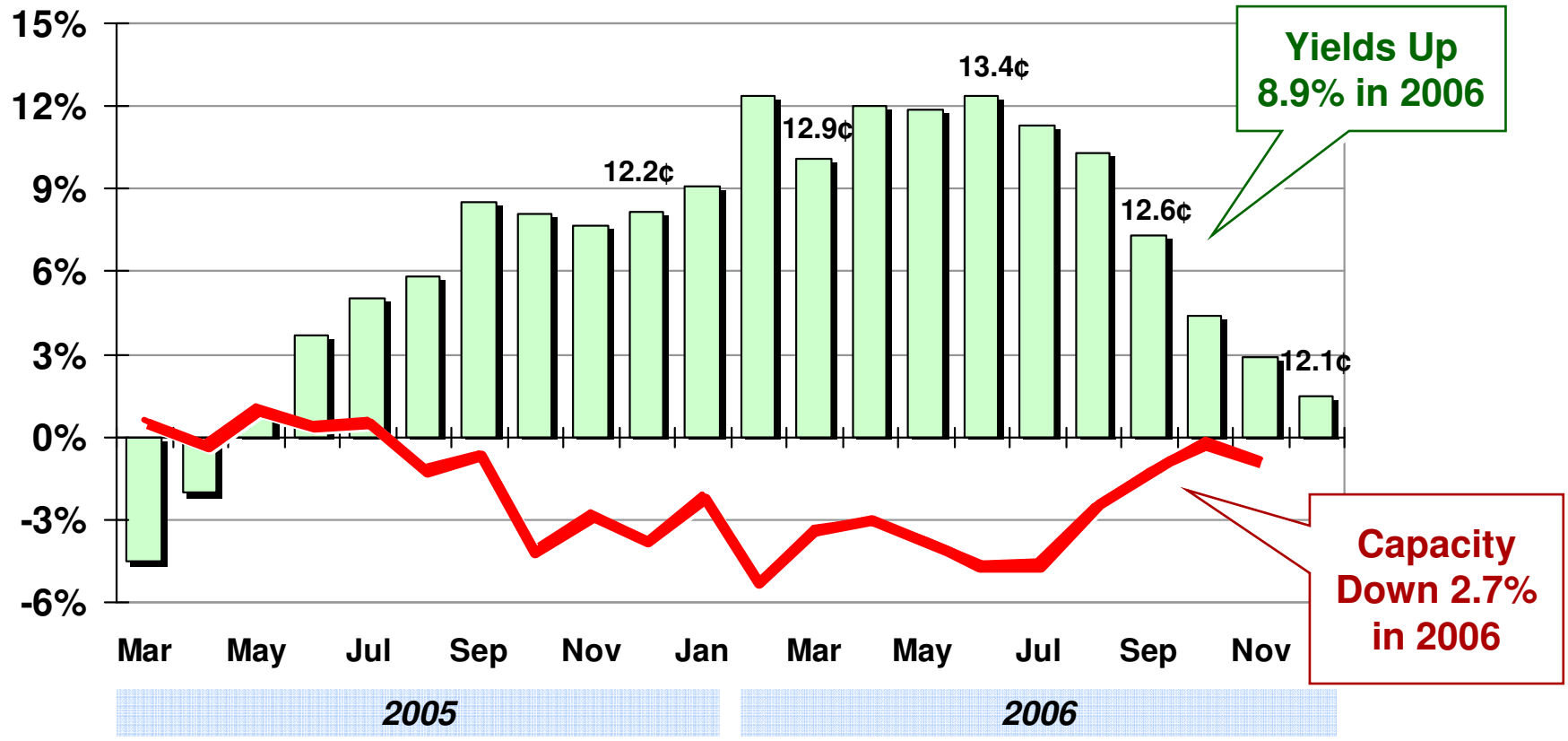
*Regional Phase II Workshops*

# AVIATION INDUSTRY AND WASHINGTON STATE TRENDS

# The Industry Has Turned Around by Tightening Capacity and Raising Fares, Though These Are Now Leveling Off

**Year-Over-Year Change in Domestic Yields and Capacity[1/]**

*March 2005 to December 2006*



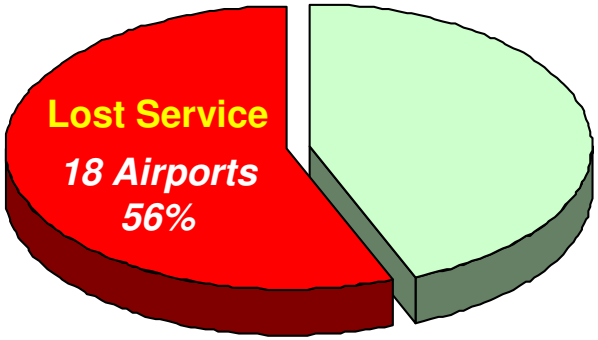

1/ Nominal yields. Includes ATA reporting carriers. Capacity in ASMs.

Source: ATA Air Transport Association

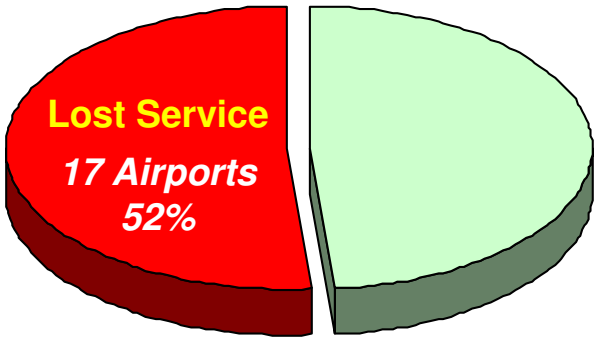
# Overall, 72% of U.S. Airports Have Lost Service Since 2000

***February 2000 vs. February 2007***

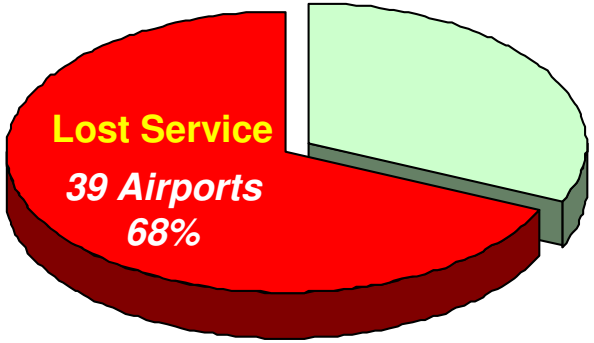
**Large Hubs**
*32 Total Airports*




**Medium Hubs**
*33 Total Airports*

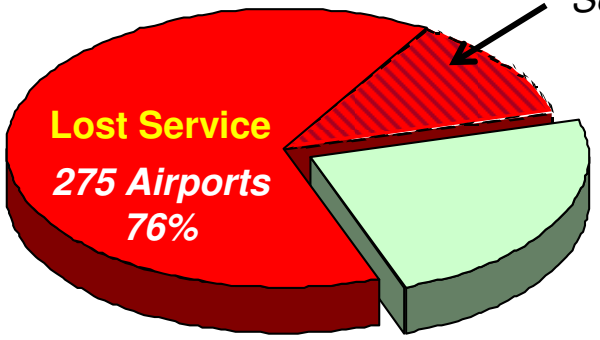



**Small Hubs**
*57 Total Airports*



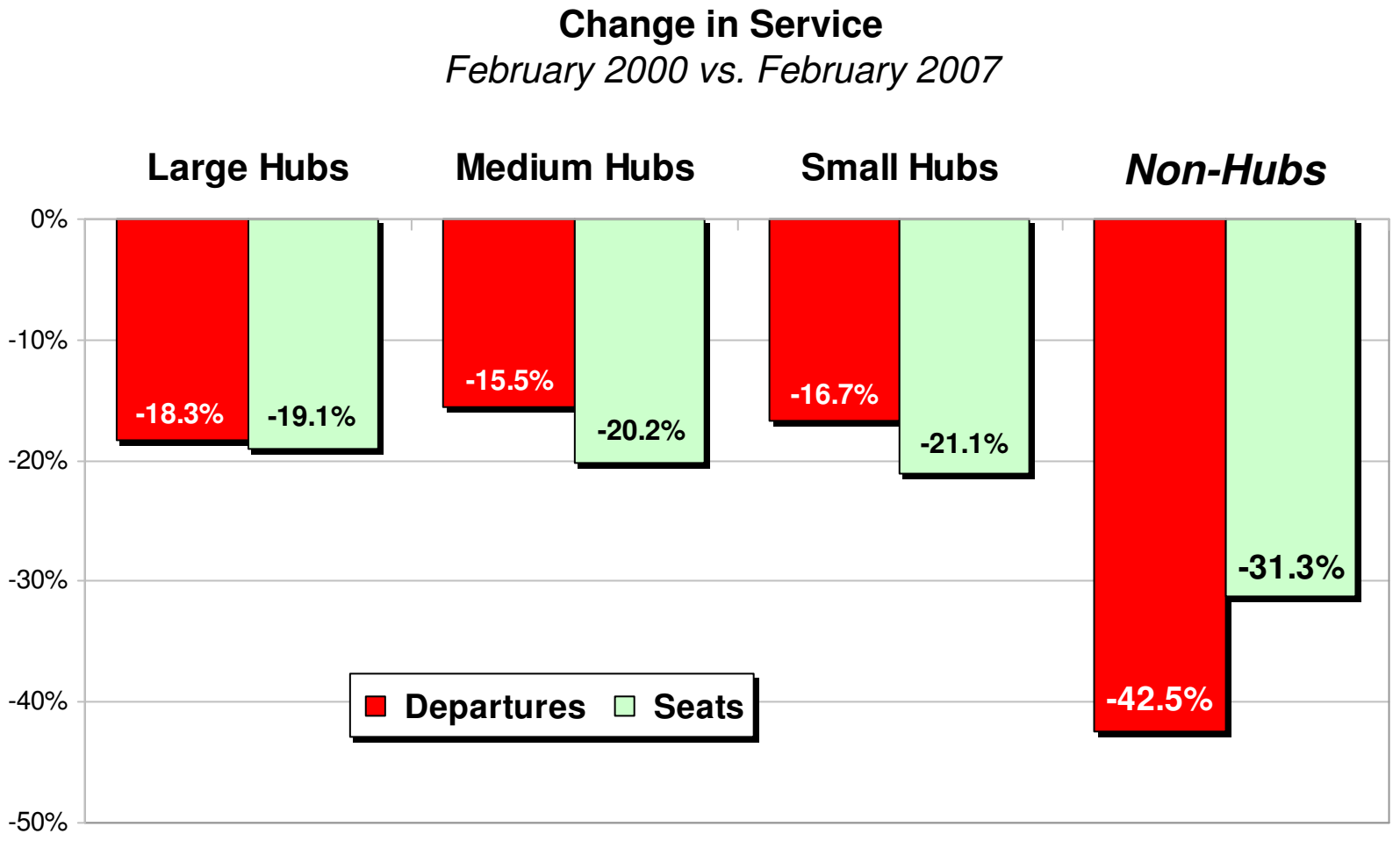

**Non-Hubs**
*360 Total Airports*

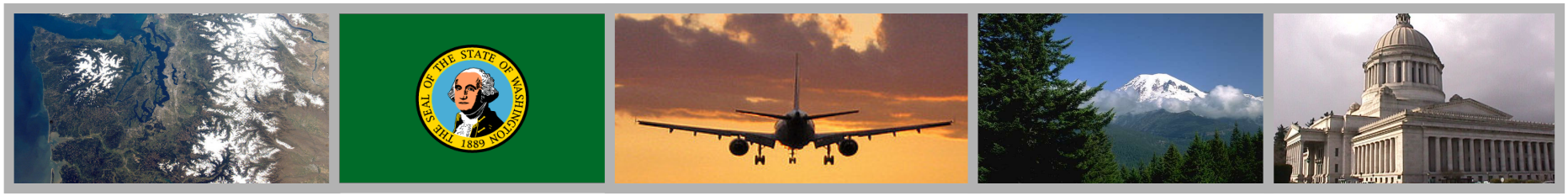
*44 Non-Hub Airports Lost <u>All</u> Service*




FAA sizes: Large-hub account for at least 1% of total U.S. passenger enplanements, Medium 0.25% - 1%, small 0.05% to 0.25%, non hubs <.25%

# Among the Airports That Have Lost Service, Non-Hubs On Average Have Been Hit the Worst





*Regional Phase II Workshops*

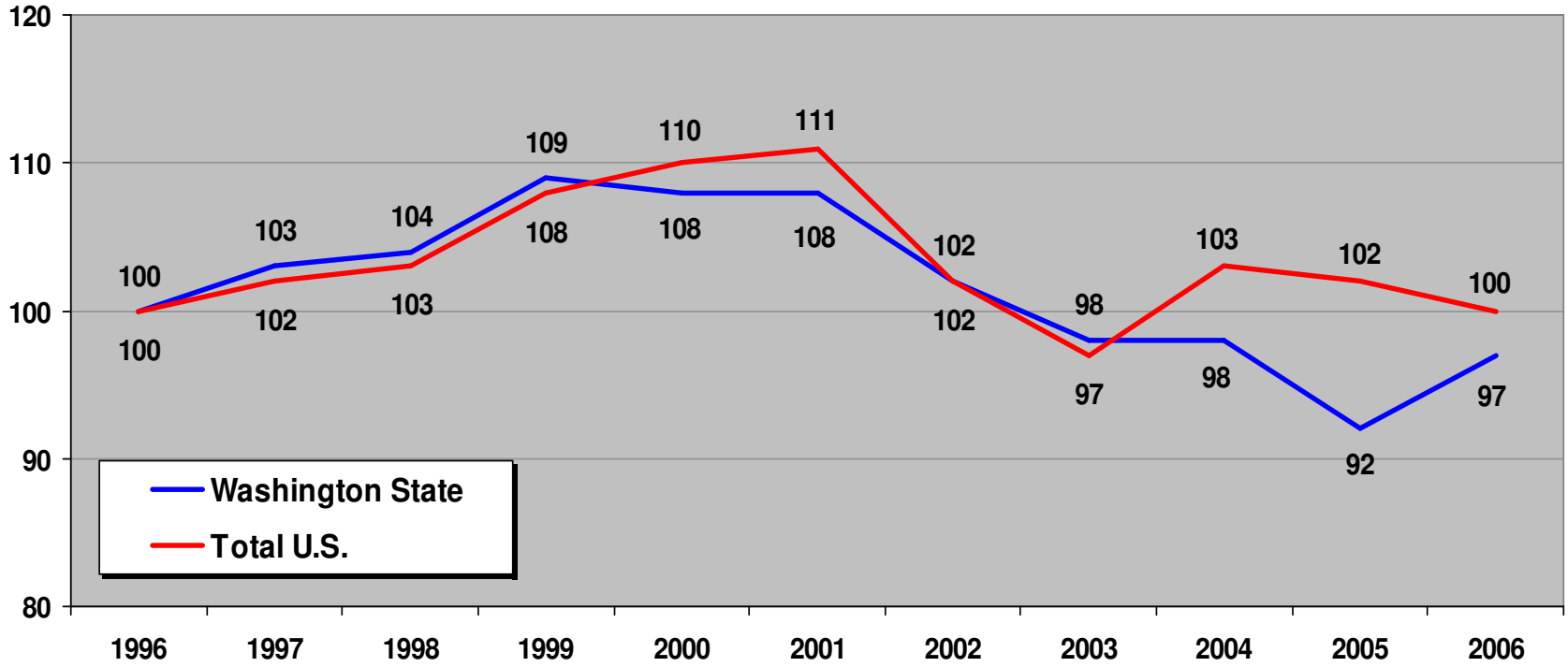
# COMMERCIAL SERVICE AIRPORTS: TRAFFIC AND OPERATIONS FORECASTS

# Growth of Scheduled Seat Capacity in Washington State Has Tracked Closely With Total U.S. Growth Over the Past 10 Years

***However, Washington Capacity Growth Has Slightly Lagged the Total U.S. in the Last 3 Years***

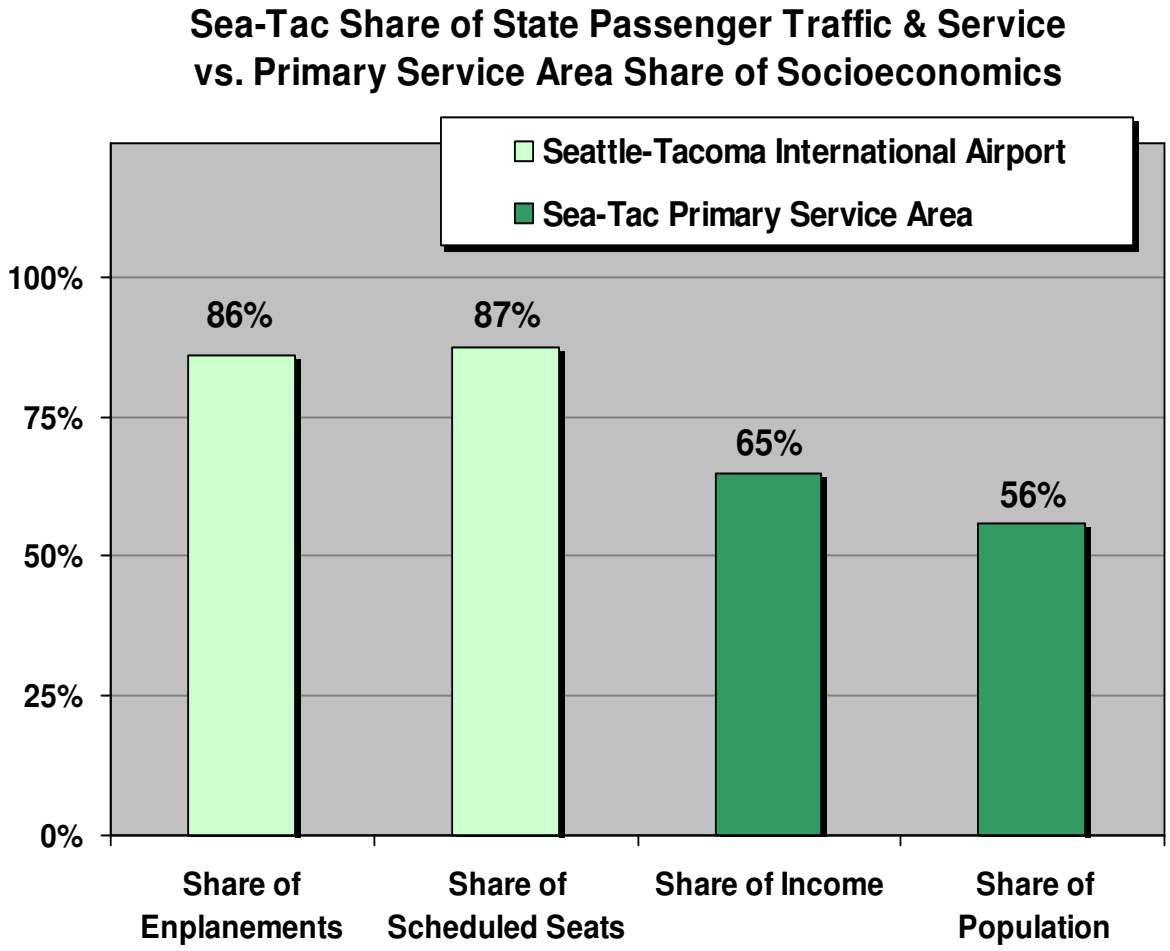
**Indexed Growth in Scheduled Seat Capacity, Washington State vs. Total US**

*August 1996 - August 2006 (1996 = 100)*




Source: Official Airline Guide

# Nonetheless, Sea-Tac Attracts a Disproportionate Share of Washington State Passenger Traffic and Service



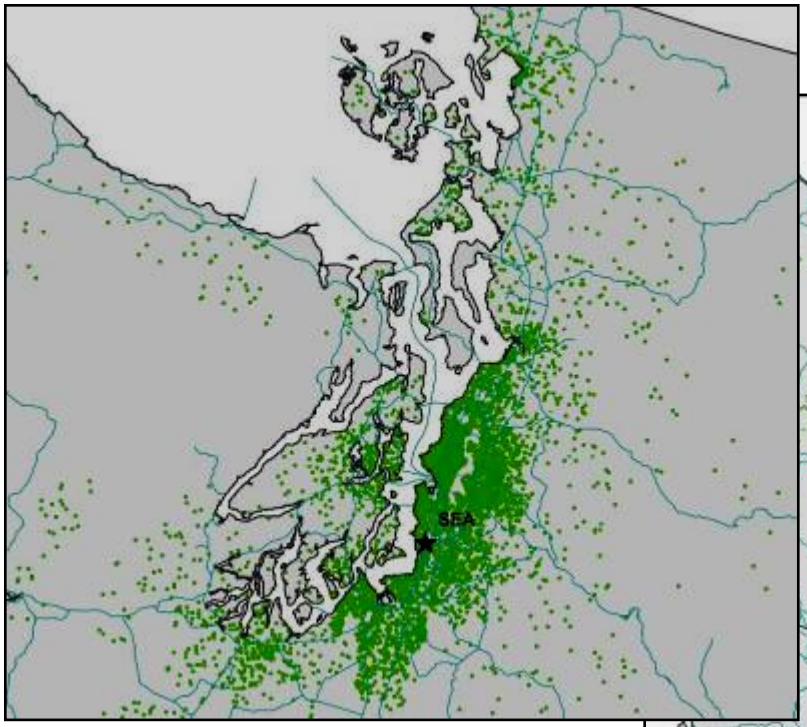

- **Reflects Connecting Activity at SEA**
- **However, Also Implies that SEA is Capturing Local Passengers from Other Airports' Catchment Areas**

Note: Sea-Tac Primary Service Area Includes King, Snohomish, Pierce, Thurston, Mason and Jefferson Counties
Sources: FAA Terminal Area Forecasts, Official Airline Guide (August 2006), NPA Data Services

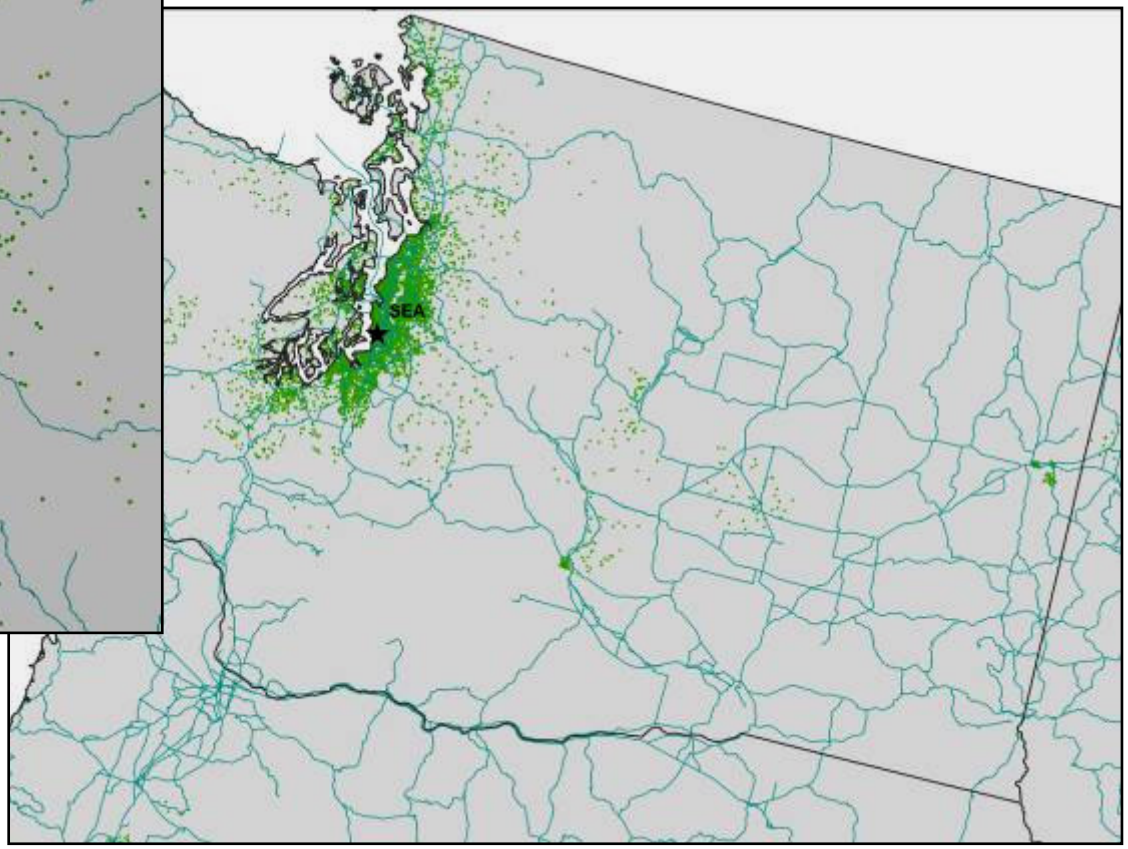
# Sea-Tac Draws Passengers from Throughout the State

**SEA-TAC Survey Passengers By Ground Origin**

*One Dot Represents 1,000 Passengers*




**Puget Sound Region**

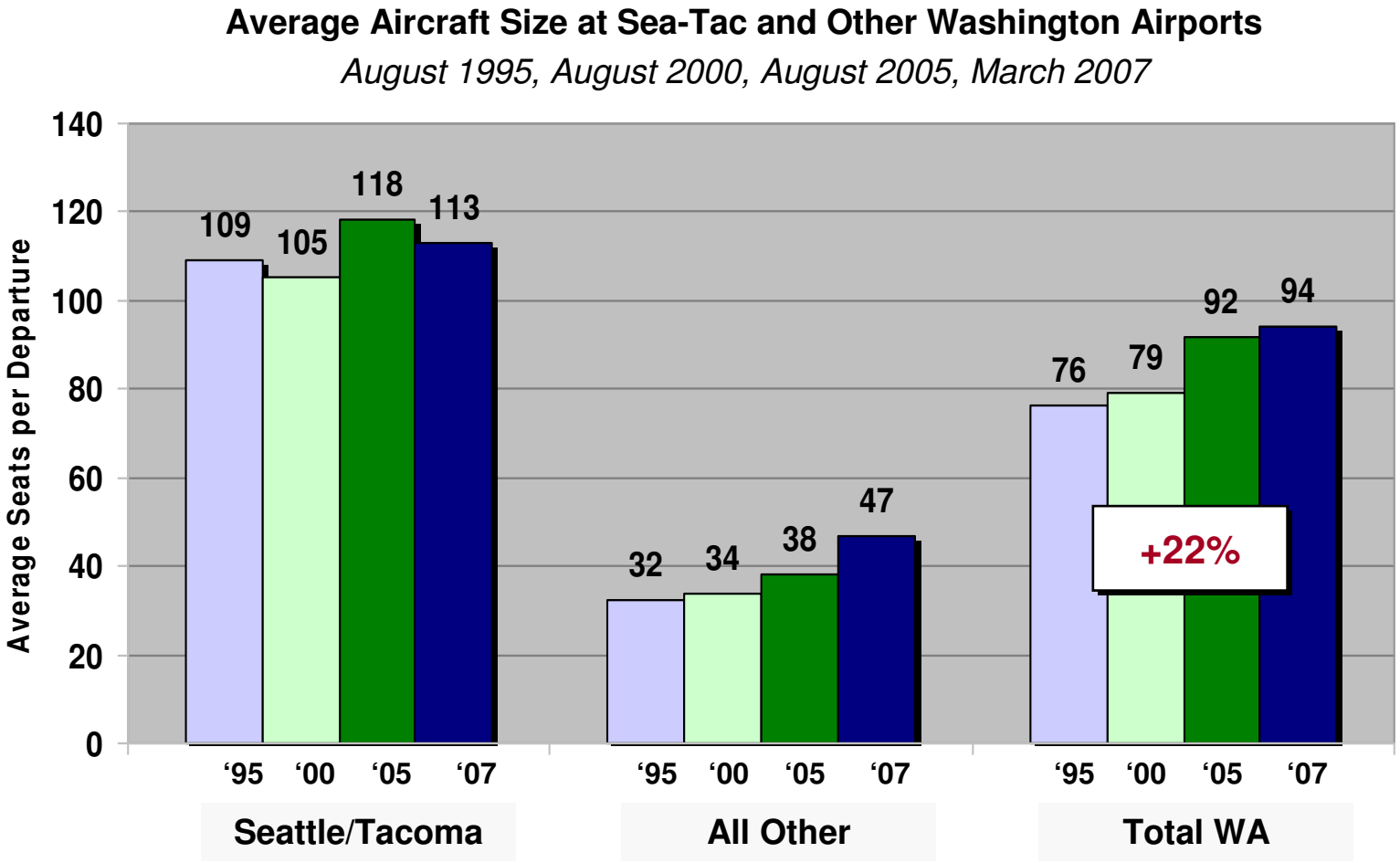



**Total State**

Source: SH&E analysis, ESRI, Sea-Tac passenger survey

# Average Aircraft Size at the Washington State Airports Has Increased by 22% Since 1995

***Increased Aircraft Size at Smaller Airports Has Resulted in Reduced Flight Frequency***




Source: OAG Schedules

Washington State Department of Transportation

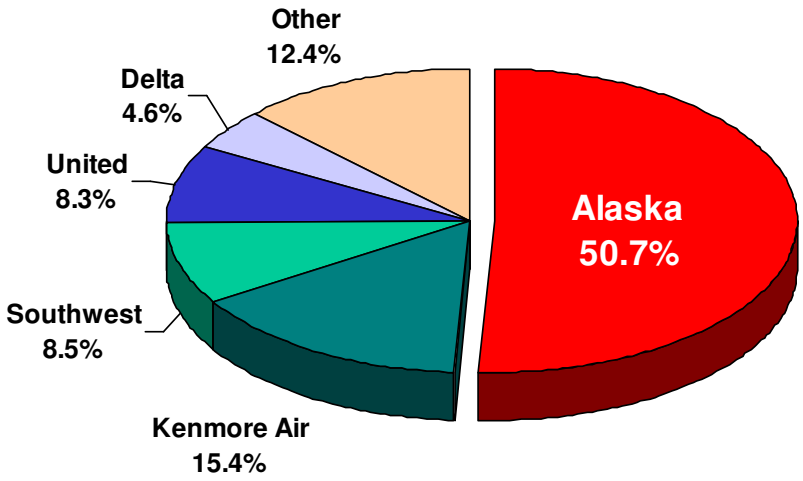


SH&E

# Alaska/Horizon Provides 51% of Weekly Departures and 49% of Weekly Seats at the Washington State Airports

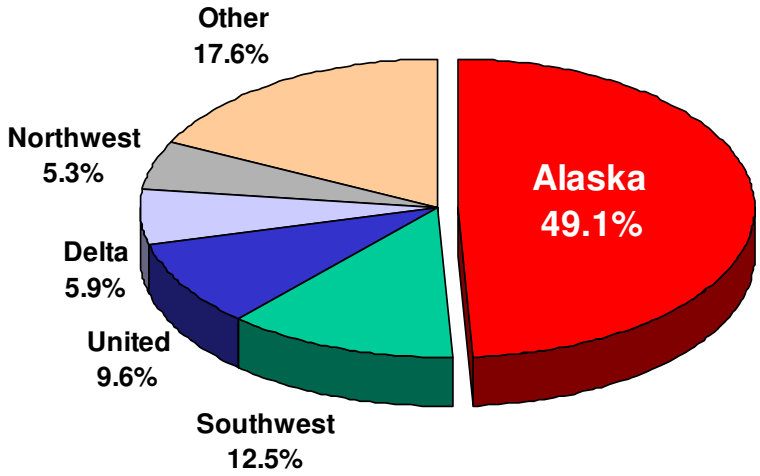
**Weekly Departure Share**

*March 2007*



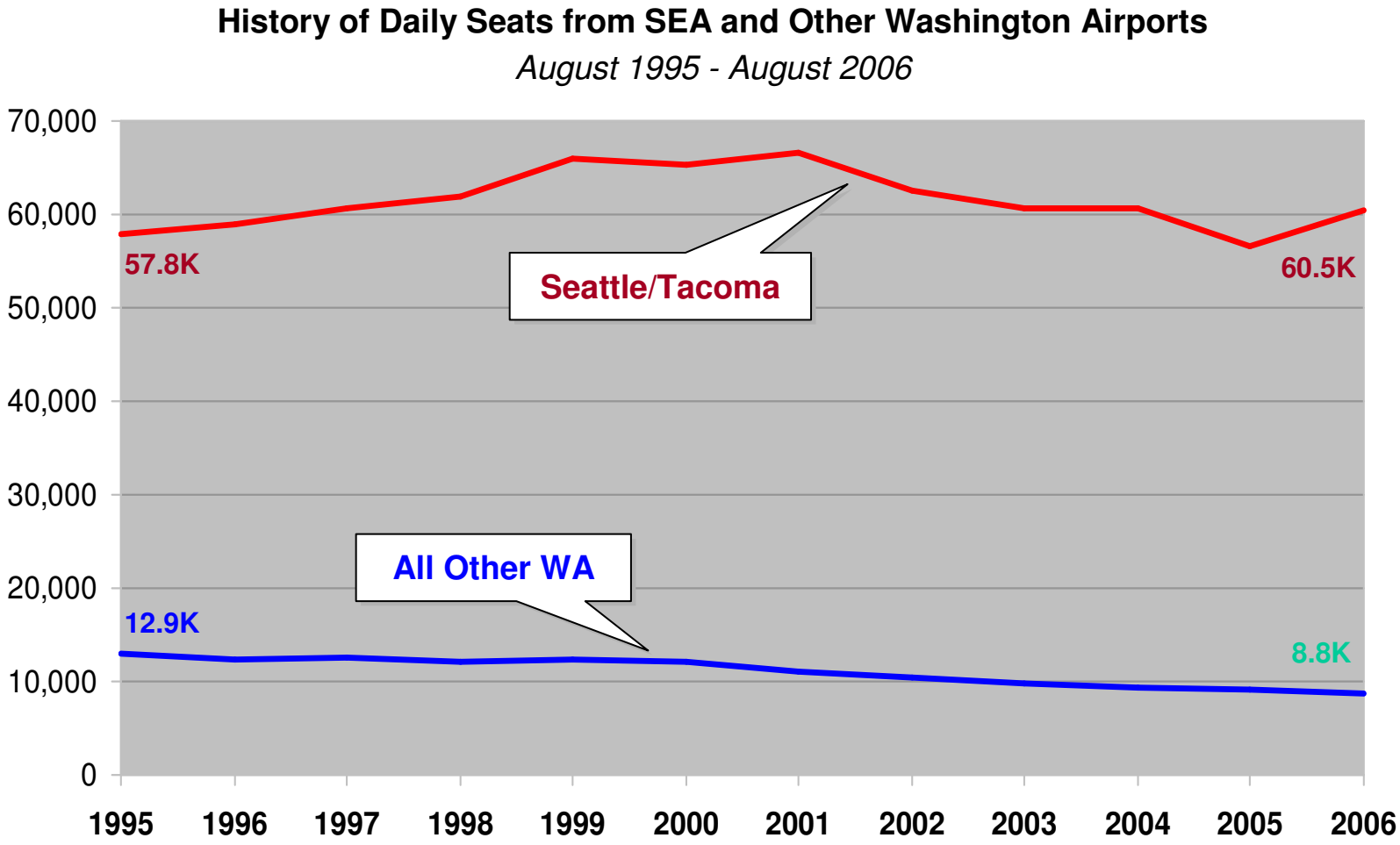

**Weekly Seat Share**

*March 2007*




Source: OAG Schedules, March 2007

# Between August 1995 and August 2006, Seat Departures at Sea-Tac Increased by a Moderate 4.5%, But Fell 32% at the Other Washington State Airports




Source: OAG Schedules

# Many Smaller Commercial Service Airports in Washington Have Lost a Considerable Amount of Air Service Since 1995

**Percentage Change in Weekly Scheduled Seats**

*August 1995 – August 2006*

| Airport | Percentage Change | Absolute Change |
|---|---|---|
| Seattle Boeing Field | 275% | 539 |
| Roche Harbor | 114% | 224 |
| Rosario | 114% | 224 |
| Westsound | 114% | 224 |
| Seattle/Tacoma | 3% | 13,515 |
| Bellingham | -11% | -447 |
| Walla Walla | -20% | -225 |
| Spokane | -23% | -12,667 |
| Pasco | -25% | -2,037 |
| Oak Harbor | -35% | -208 |
| Moses Lake | -54% | -396 |
| Wenatchee | -57% | -1,362 |
| Friday Harbor | -57% | -1,025 |
| Yakima | -61% | -2,398 |
| Pullman/Moscow | -68% | -2,223 |
| Seattle Lake Union SPB | -71% | -1,120 |
| Lopez Island | -80% | -854 |
| Kenmore | -86% | -805 |
| Port Angeles | -89% | -2,420 |
| Olympia | -100% | -312 |
| Center Island | -100% | -525 |
| Decatur Island | -100% | -525 |
| Blakely Island | -100% | -532 |
| Anacortes | -100% | -707 |
| Eastsound | -100% | -932 |

Source: Official Airline Guide

- **Except for Sea-Tac, Boeing Field and Select San Juan Island Airports, All Others Have Lost Seats Since 1995**
- **6 Airports Have Lost Service Entirely**
- **In Many Cases, Competing Carriers Have Exited the Market Completely, Leaving a Single Carrier – Horizon – Which Has Reduced its Own Service Frequency**
  - Partly Offset by Horizon's Replacement of 19-Seat Metros With 37-Seat Dash 8's

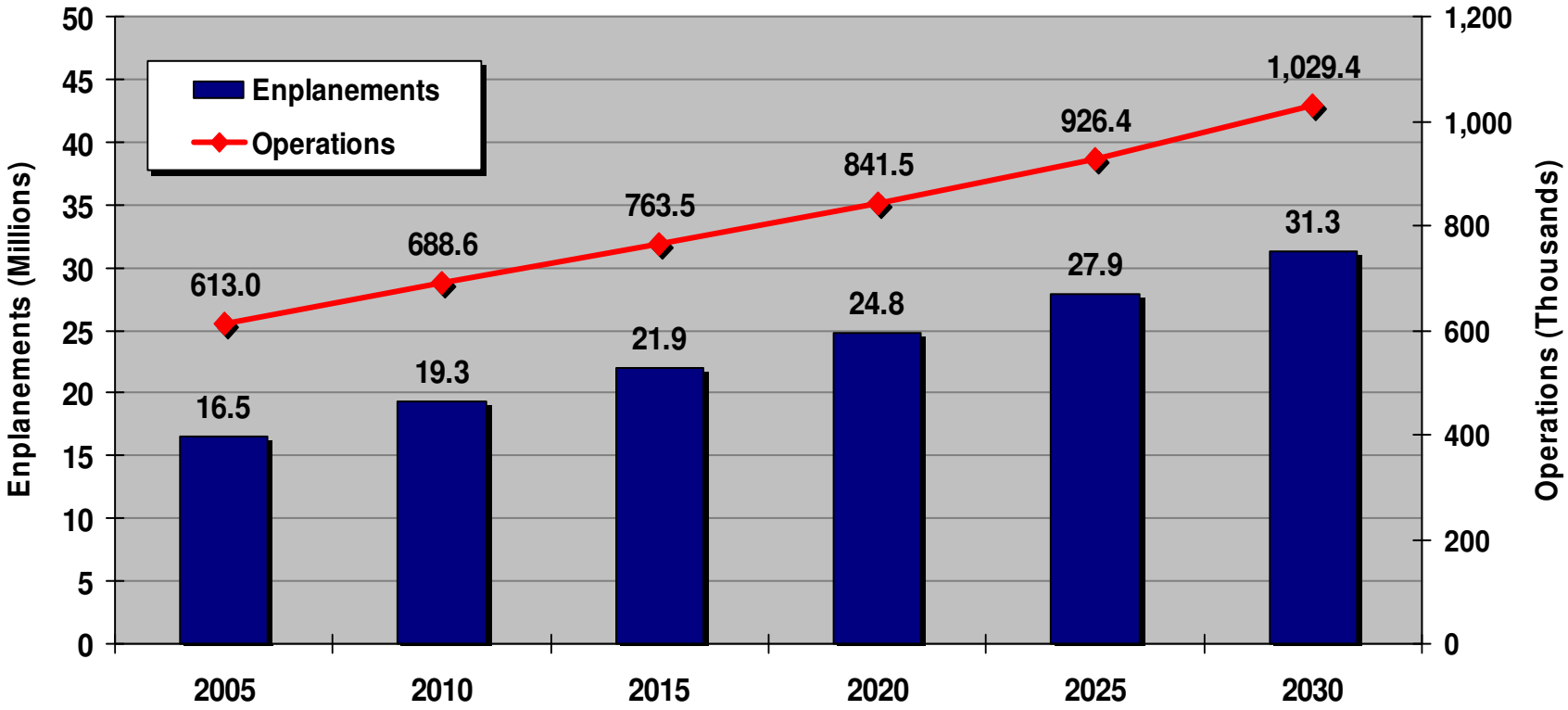

# Commercial Airport Forecast Results

# SH&E Forecasts That Enplanements at Washington Commercial Airports Will Increase by 90% (2.6% per Year) Between 2005 and 2030

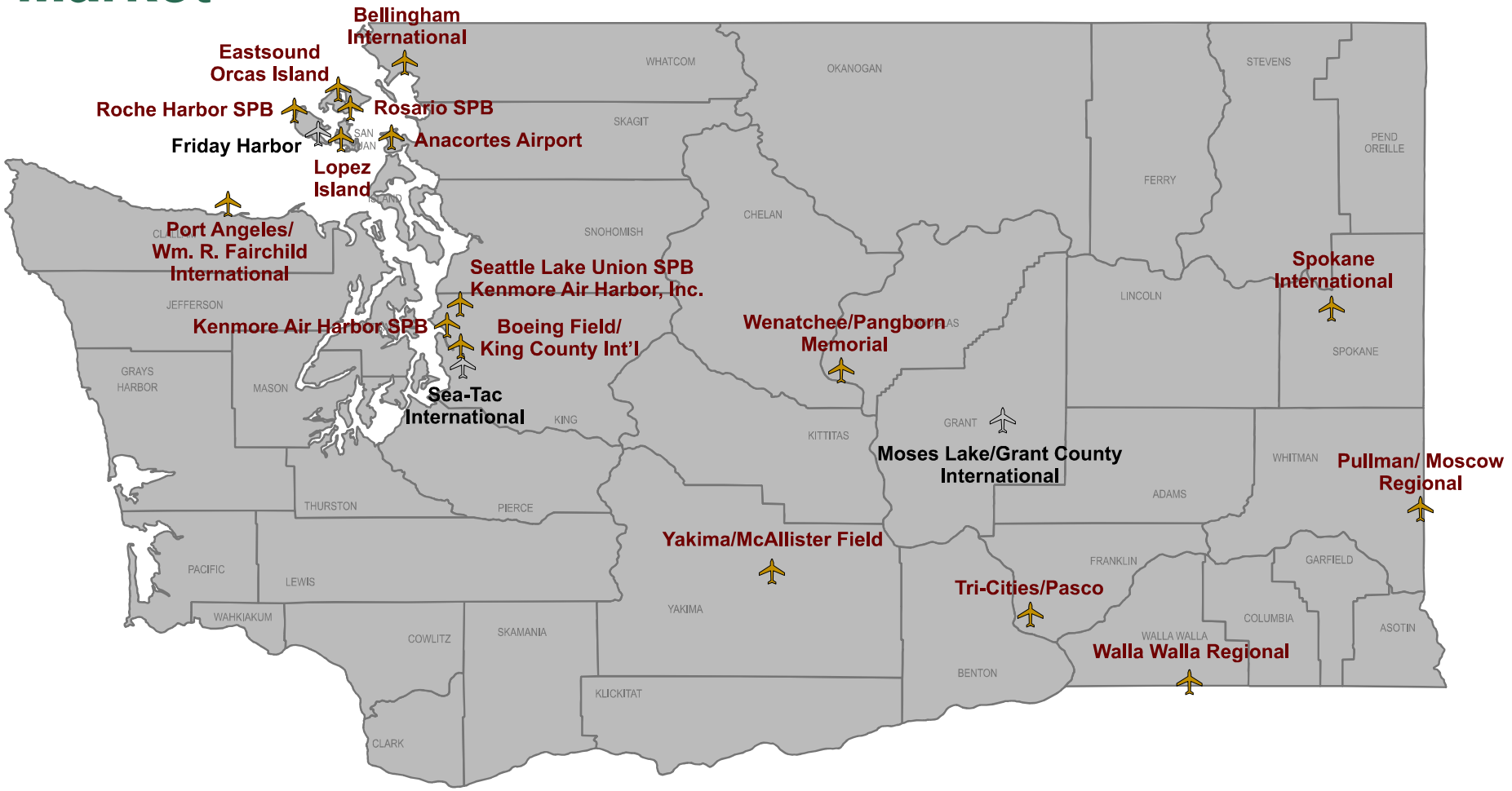
***Commercial Aircraft Operations are Projected to Increase by 68% (2.1% per Year)***

**Forecast Growth in Enplanements and Commercial Operations at Washington Commercial Airports**

*2005-2030*



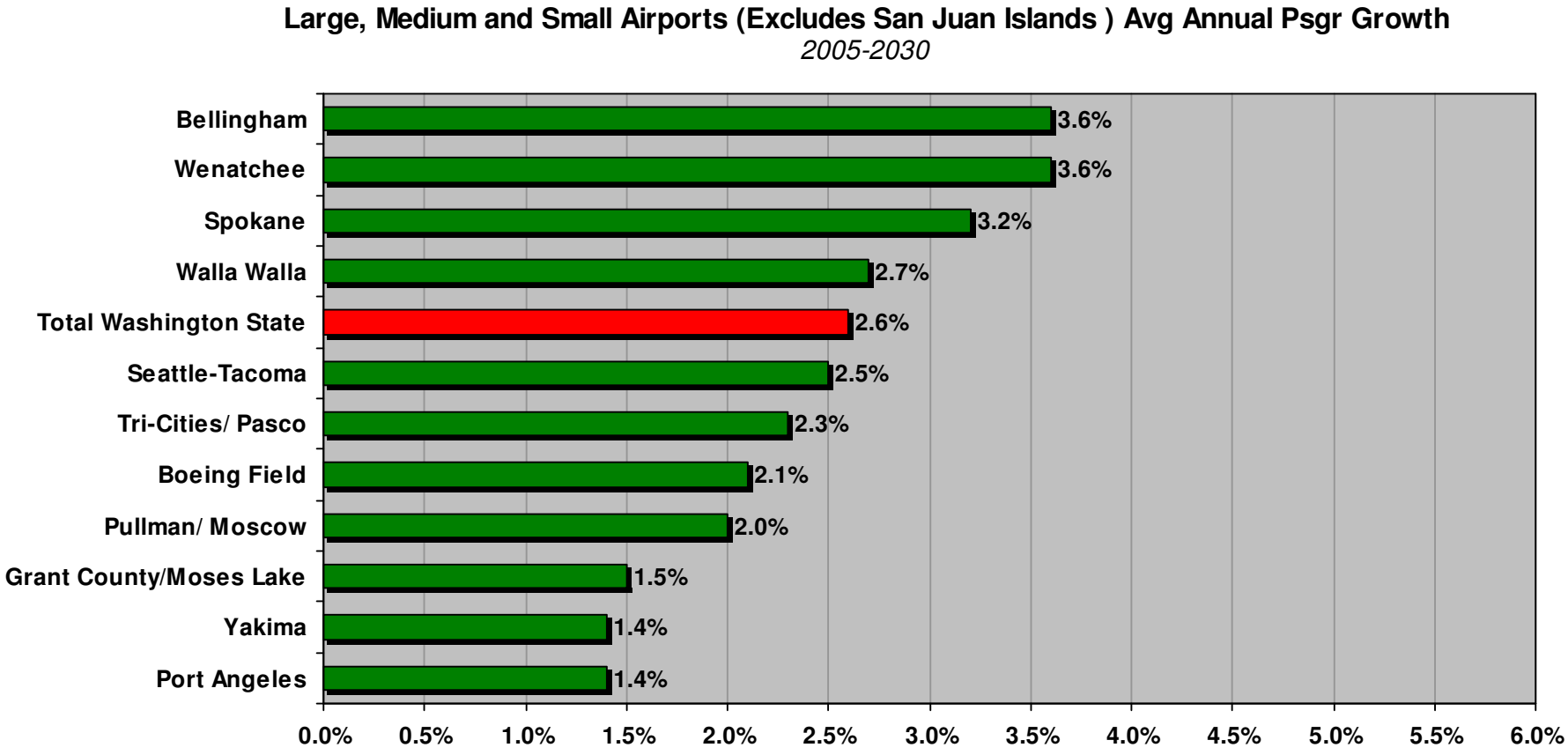
# Forecasts Were Developed at 20 Commercial Airports that also Included an Analysis of Each Market



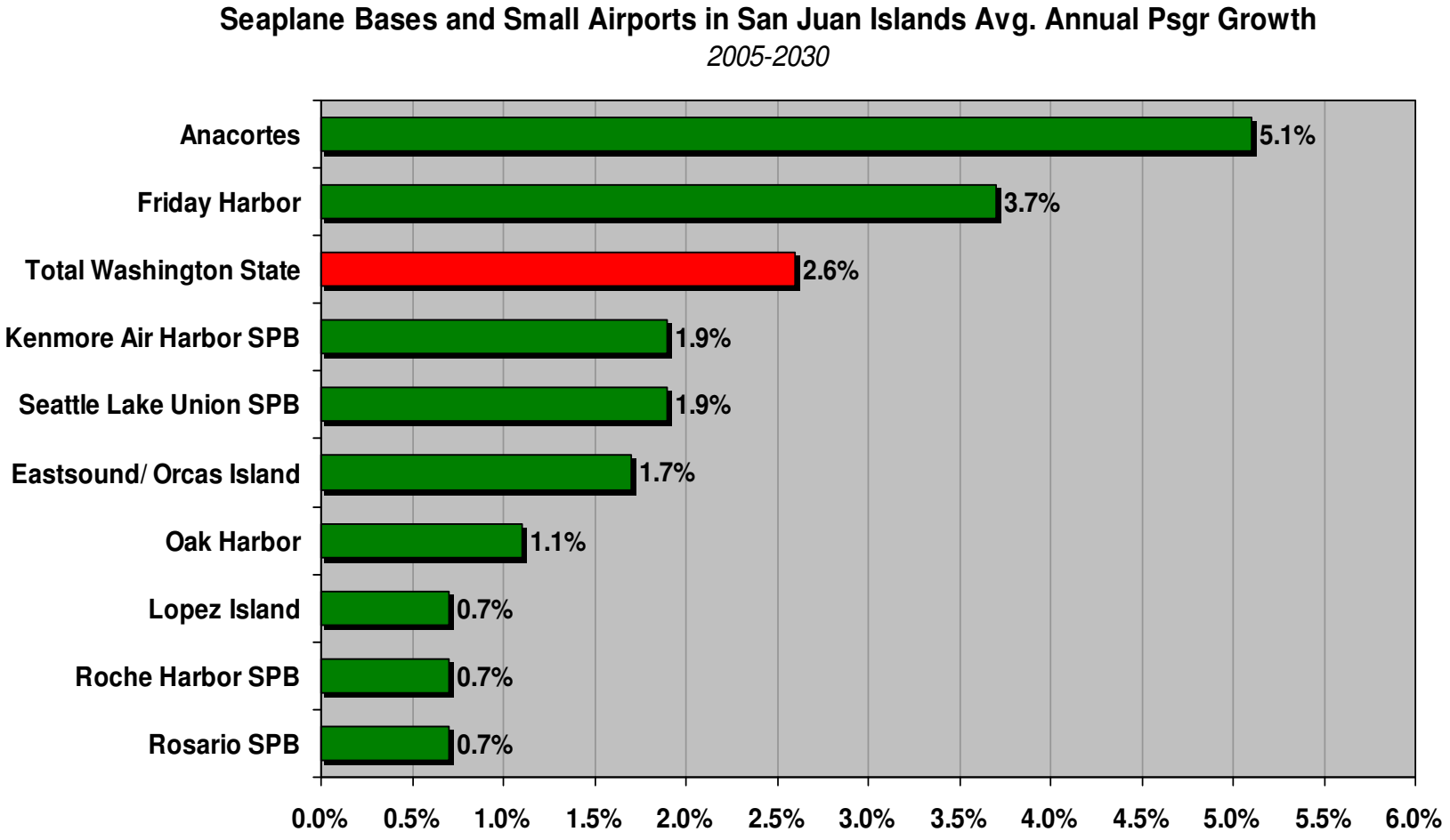

Note: Red Typeface = SH&E Forecast New, Black Typeface airports used existing forecasts extrapolated to 2030

# SH&E Has Projected Increased Passenger Demand at Each of the Commercial Air Service Airports in Washington State

***Local Demand is Projected to Increase Over the Long Term at Each of the Airports, Despite the Risk of Service Loss at Several Airports in the Short- or Medium-Term***



# SH&E Has Projected Increased Passenger Demand at Each of the Commercial Air Service Airports in Washington State, *Continued*

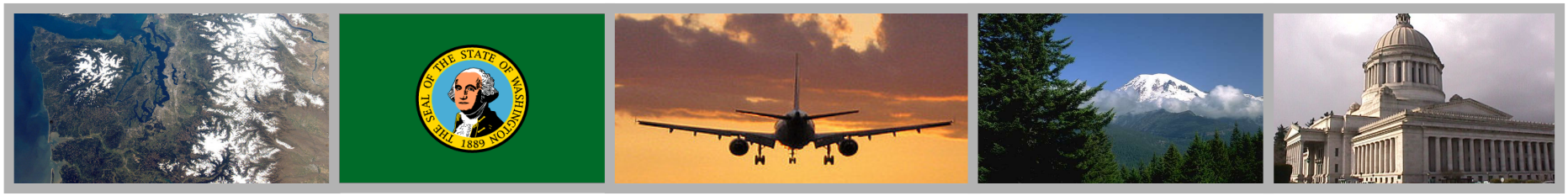


# Key Conclusions

- **Washington's Commercial Passenger Traffic is Highly Concentrated, With Sea-Tac Accounting for 86% of the State's Total Enplanements**
- **Passenger Traffic in Washington is Projected to Remain Concentrated at Sea-Tac and Spokane for the Foreseeable Future**
- **Sea-Tac and Spokane are the Primary Airports in the State That Attract Passenger "Leakage" from Smaller Airports**
- **A Number of Smaller Airports in Washington Have Experienced Considerable Declines in Passenger Traffic and Commercial Operations**

# Key Conclusions, *Continued*

- **Horizon (QX) May Retire its 37-Seat Dash 8-200 Turboprops in the Next Several Years**
  - If Dash 8-200's are Eliminated, QX Fleet Will Consist of Aircraft Nearly Twice the Seat Capacity.
  - It is Uncertain if Horizon Could Operate These Larger Aircraft Economically to Smaller Markets Such as Walla Walla, Pullman/Moscow or Wenatchee
- **In the Event That Horizon Elects to Withdraw Service, the US DOT's Essential Air Service Program ("EAS") Would Act to Prevent a Total Loss of Scheduled Air Service**
- **Between 2005 and 2030, Passenger Enplanements at Washington State Commercial Airports are Projected to Increase by Nearly 90% Overall (2.6% per Year)**
- **Between 2005 and 2030, Commercial Aircraft Operations at Washington State Commercial Airports are Projected to Increase by About 68% in Total (2.1% per Year)**



*Regional Phase II Workshops*

# GENERAL AVIATION ACTIVITY FORECASTS

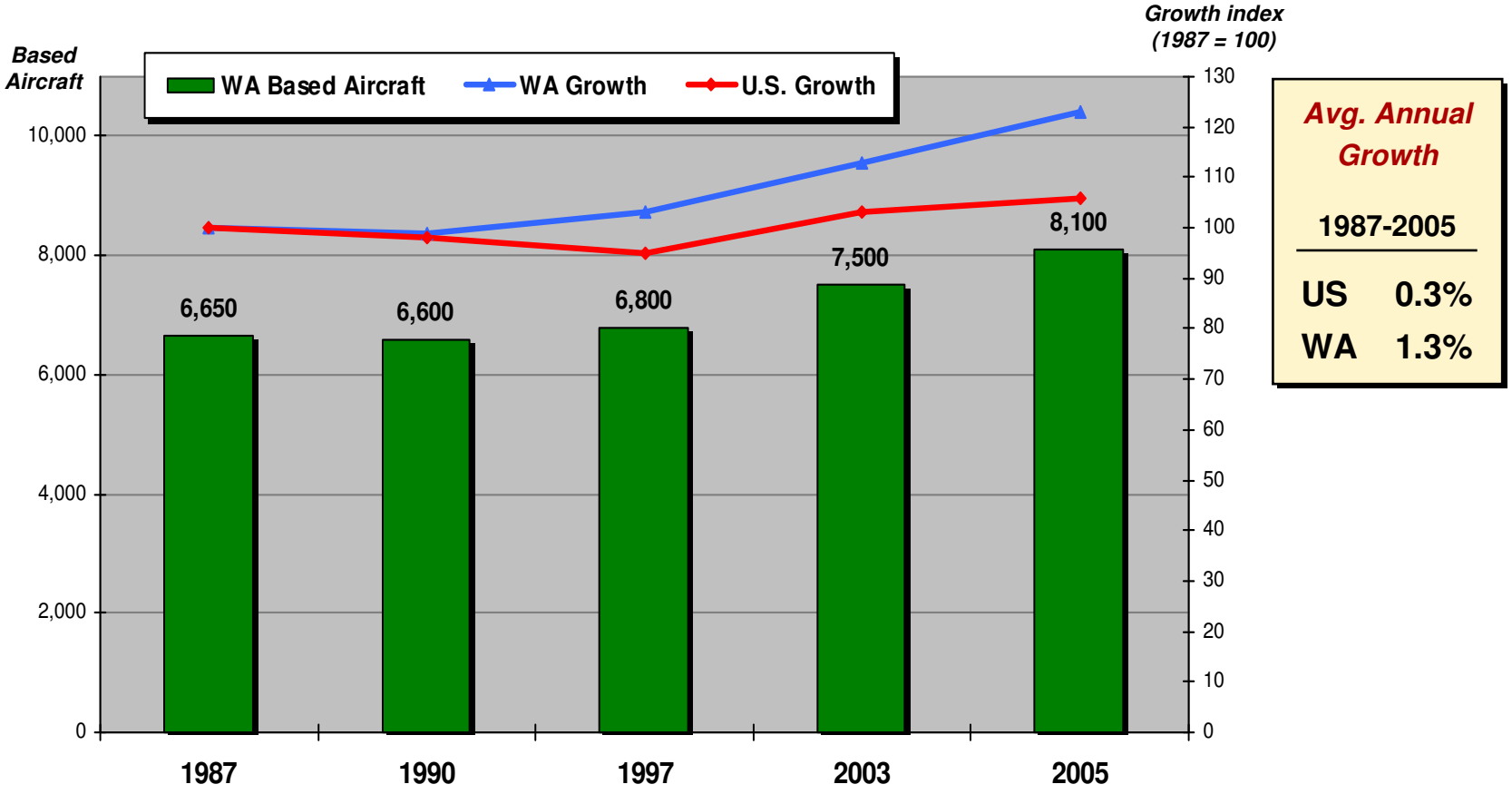
# Significance of General Aviation to the Washington State Aviation System

- **General aviation operations represent 80 percent of 2005 total aircraft operations in Washington State**
- **The State's GA airports span a broad range of activity**
  - The number of GA based aircraft at individual Washington airports ranges from less than 5 to over 500
- **GA provides the benefits of aviation to communities not served by commercial airports**

# Over the past 18 years, growth in GA activity in Washington State has outpaced the U.S.

**Washington State Historical Based Aircraft vs. U.S. as a Whole**

*1987 - 2005*



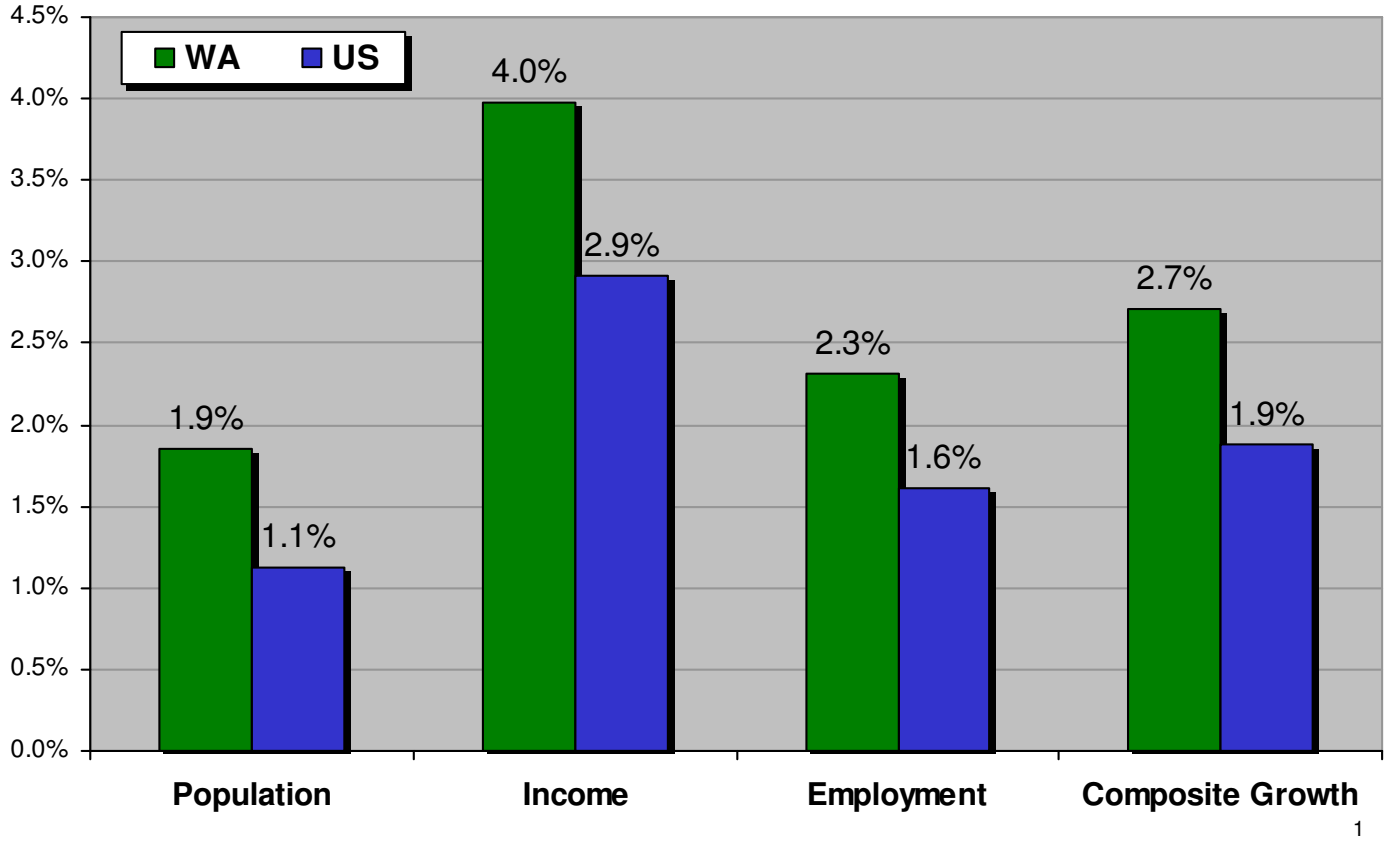

| Avg. Annual Growth | |
|---|---|
| 1987-2005 | |
| US | 0.3% |
| WA | 1.3% |

Sources: FAA 2006-2017 Aerospace Forecast, WSDOT, WA 2006 Airport Inventory Survey

# Washington State's historical socio-economic growth has also outpaced the U.S.

**Comparison of WA State and U.S Historical Socio-Economic Average Annual Growth**

*1987 - 2005*



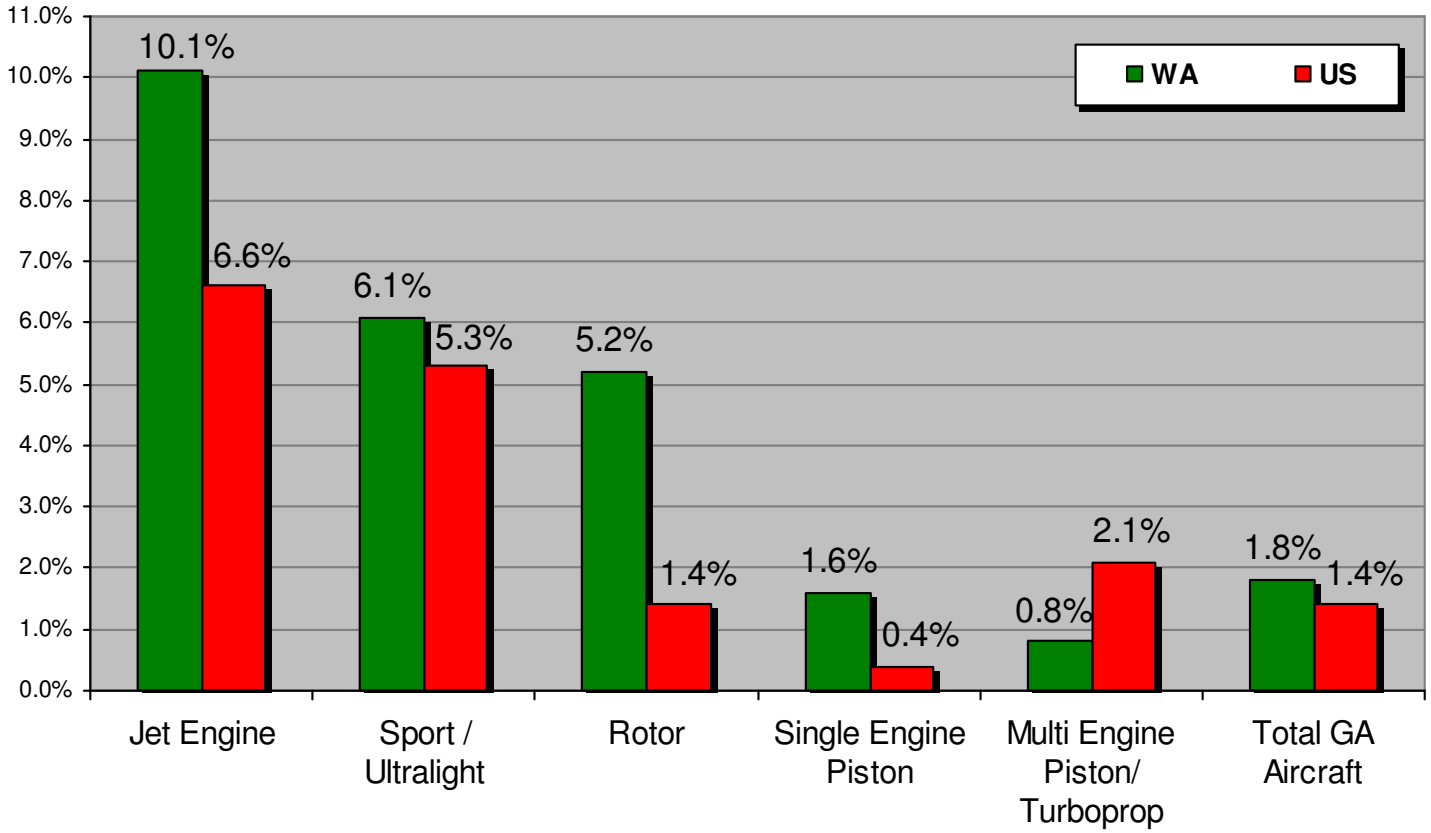

[1] Represents average growth rate for Population, Personal Income and Employment

Sources: U.S. Bureau of the Census, U.S. Bureau of Economic Analysis, NPA Data Services Inc.

# Jets and Sports/Ultralights have been the fastest growing GA segment, both nationally and within Washington State

**Historical GA Fleet Growth for Washington State and the U.S. by Aircraft Type**

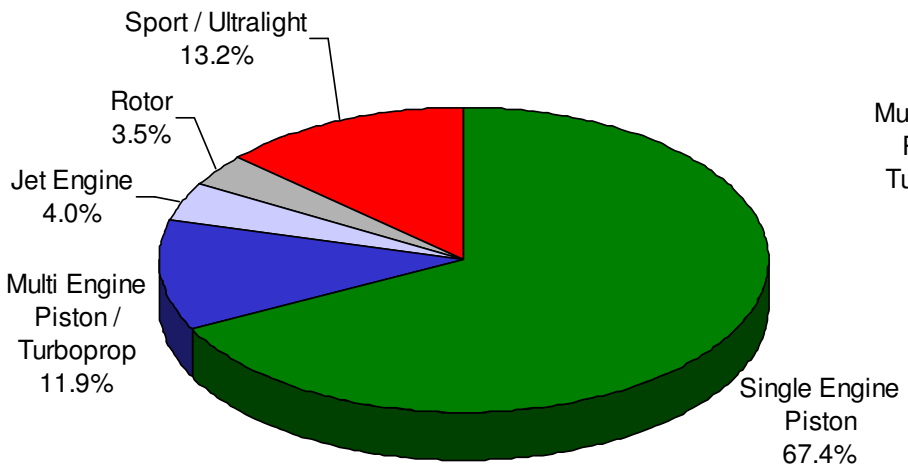
*1997 - 2005*



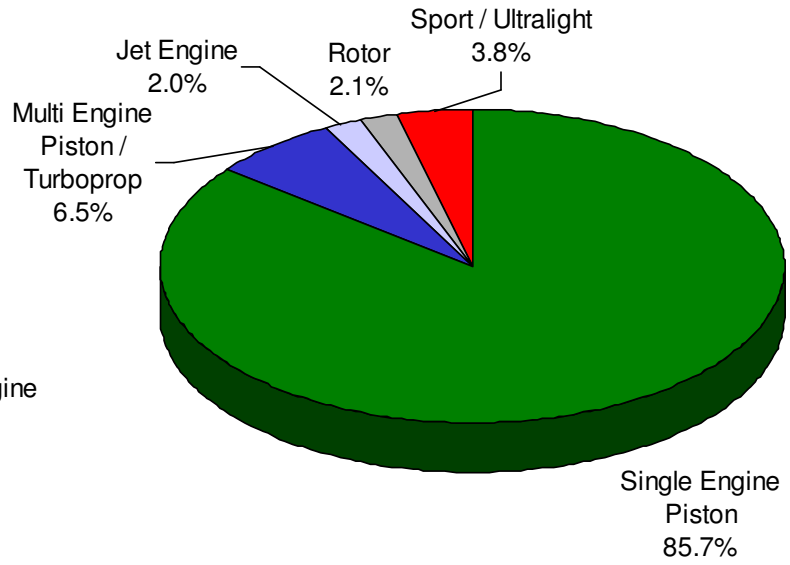

Sources: WA Airport Inventory Survey, 1997, 2006

# Nevertheless, jets still represent a low share of the total GA fleet in both Washington State and the nation

**Current National GA Fleet Mix**
*2005*

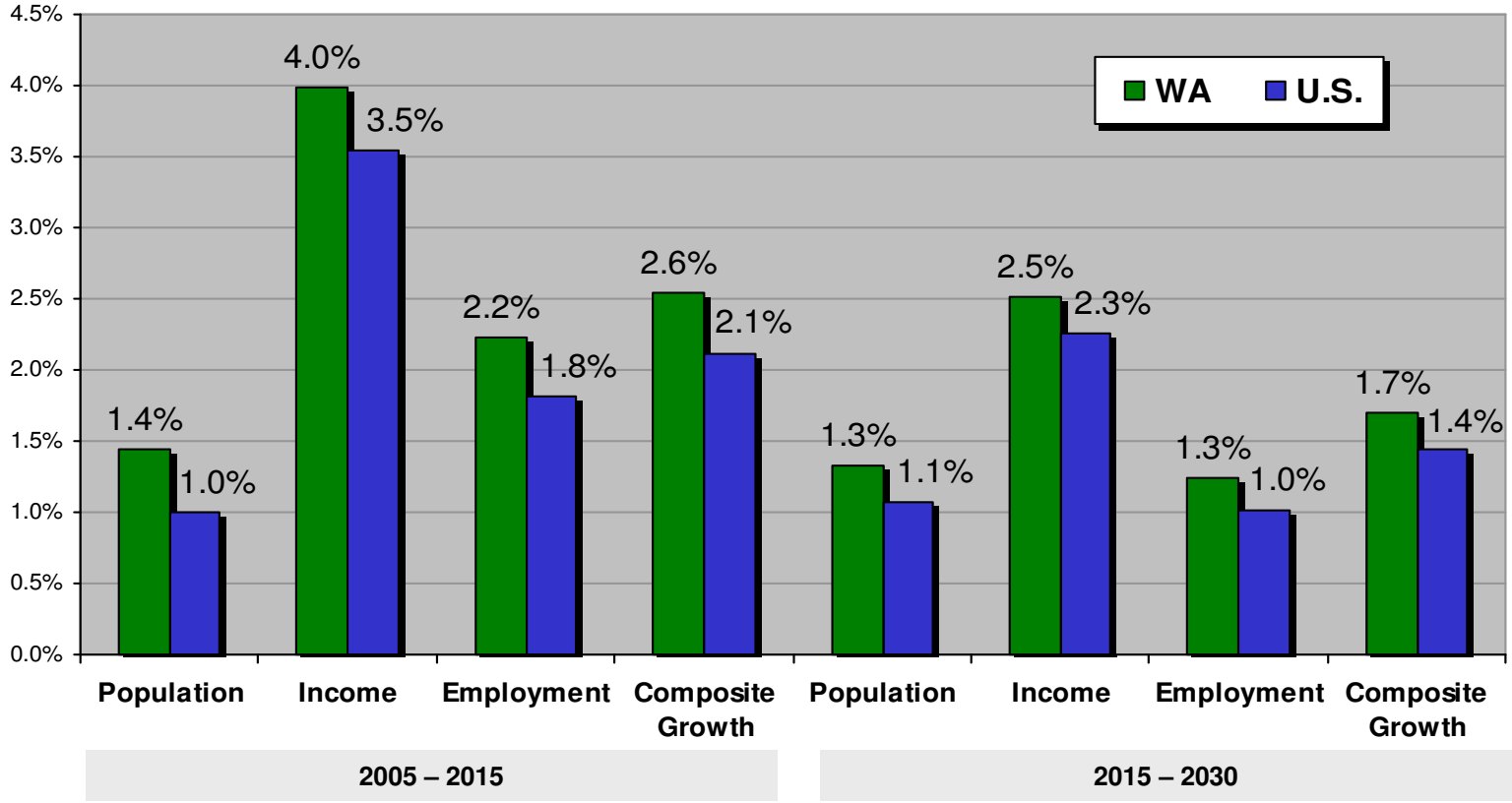



**Current Washington GA Fleet Mix**
*2005*



# Socio-economic growth in Washington State is forecast to continue to outpace the U.S.

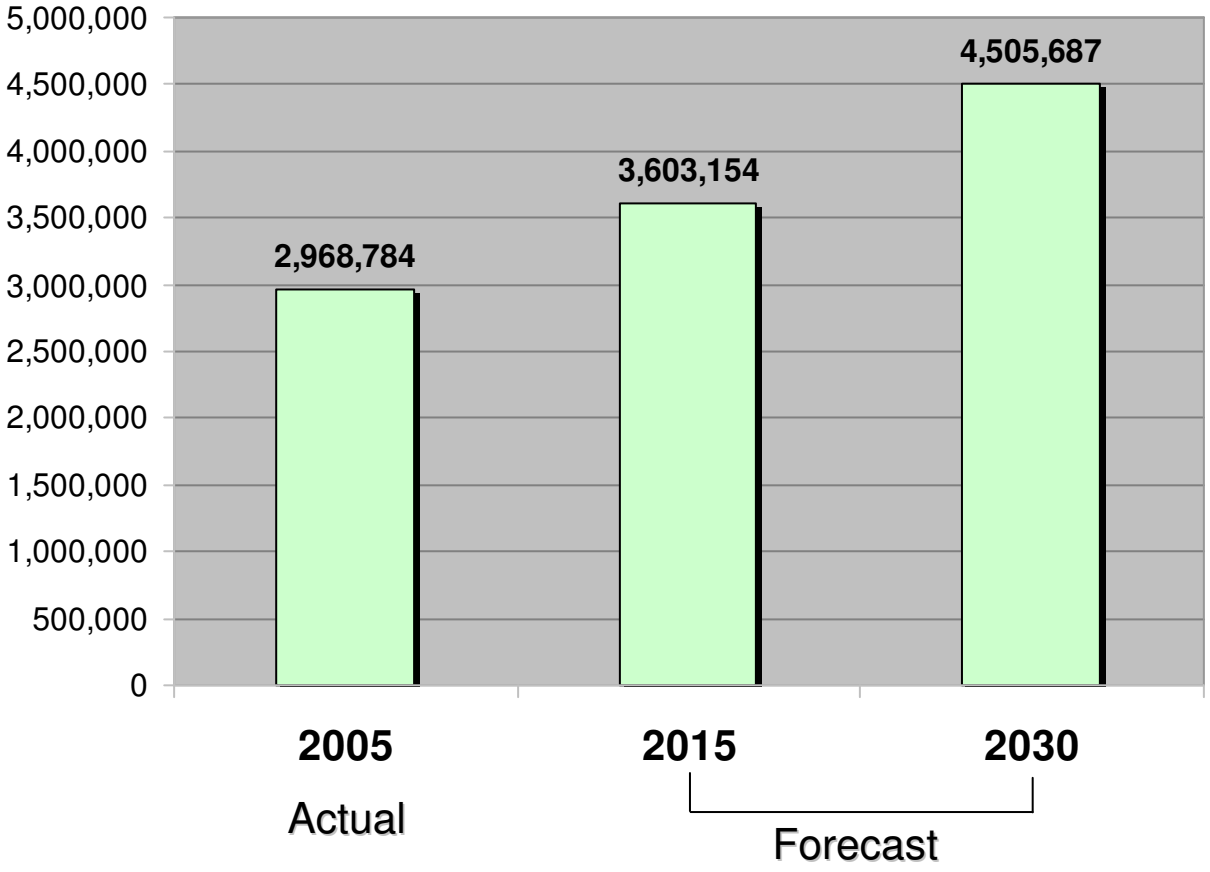
**Comparison of WA State and U.S Forecast Socio-Economic Average Annual Growth**
*2005 - 2030*




Sources: U.S. Bureau of the Census, U.S. Bureau of Economic Analysis, NPA Data Services Inc.

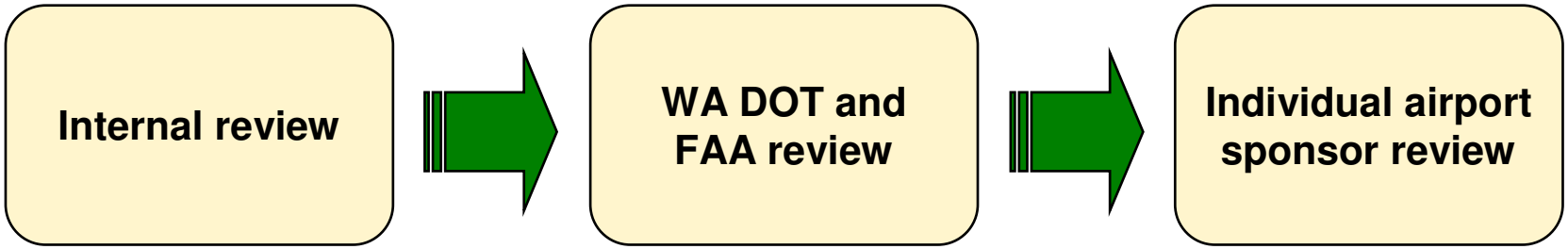
# GA operations are forecast to increase from 2.9 million to 4.5 million over the forecast period

**Forecast GA Operations for Washington State**
*2005 - 2030*

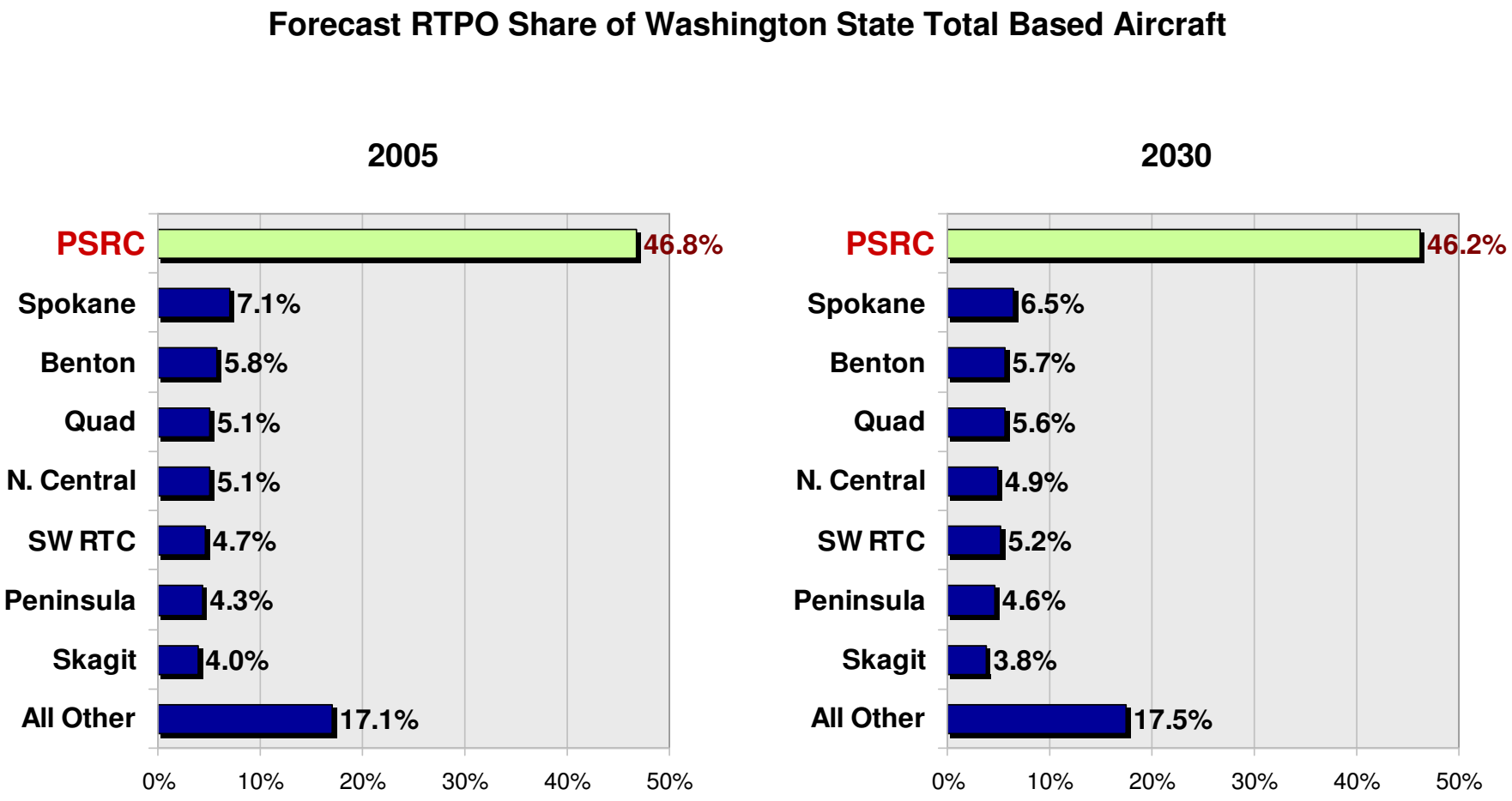



| *Avg. Annual Growth* | |
|---|---|
| 2005-2015 | 2.0% |
| 2015-2030 | 1.5% |
| 2005-2030 | 1.7% |

# The general aviation activity forecasts have undergone a three-step review process

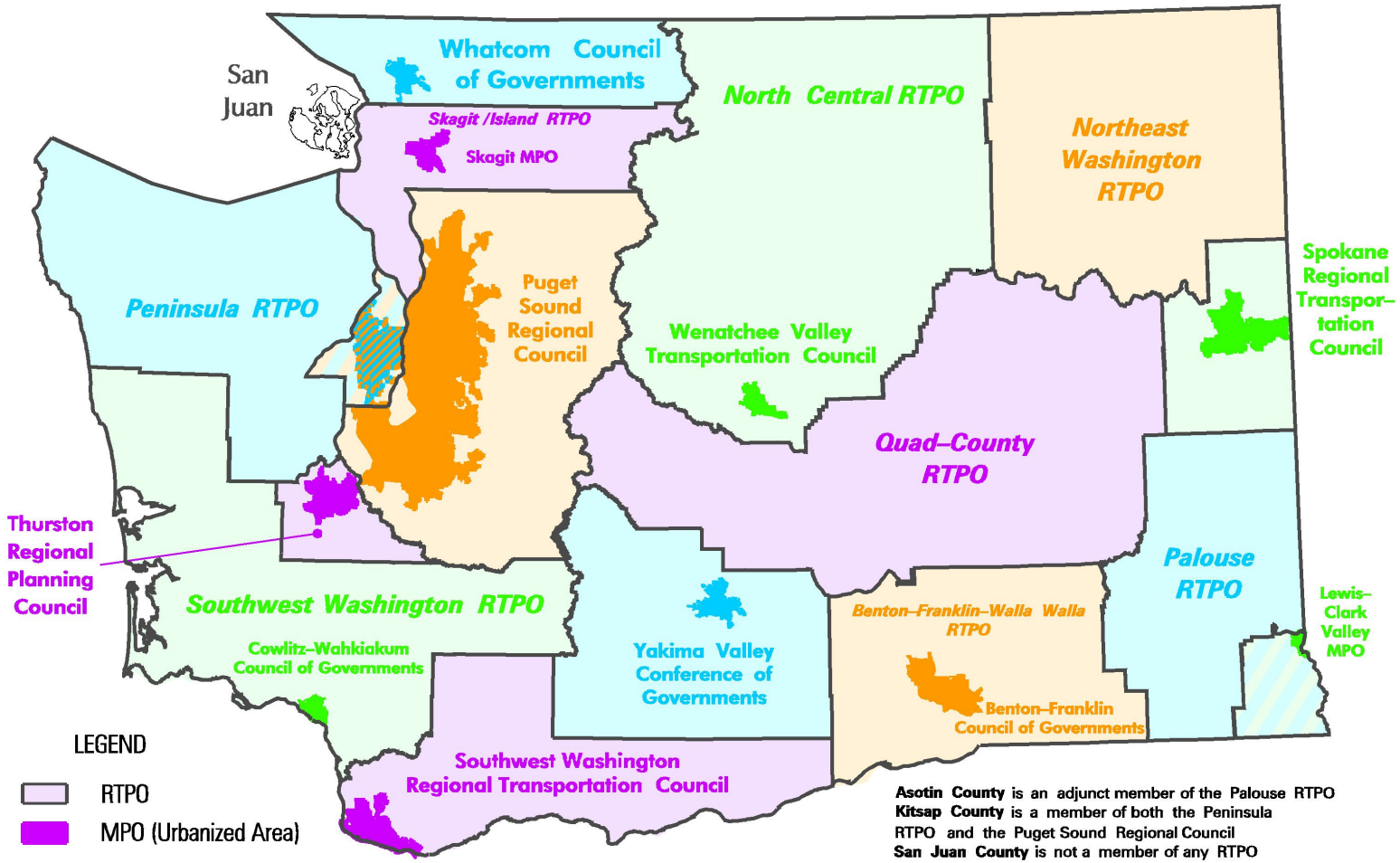


# The Puget Sound Region will continue to represent the largest share of Washington's based GA aircraft



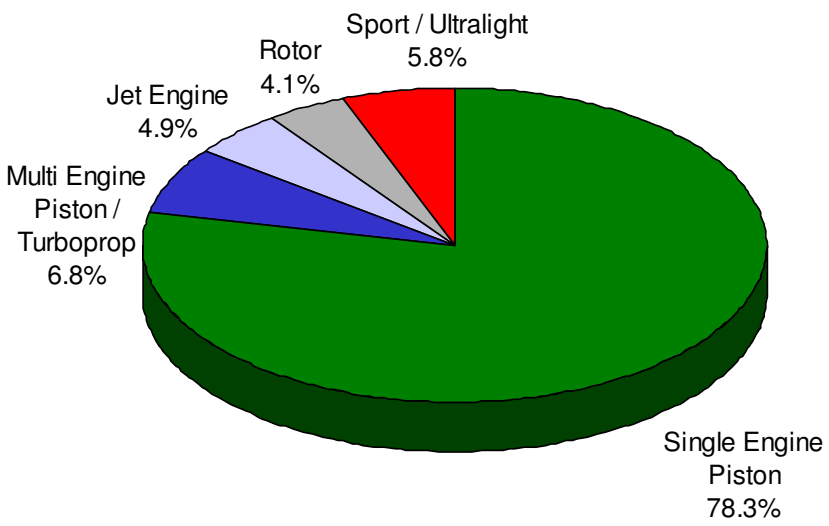

Other includes: SW RTPO, Thurston, Yakima, Whatcom, Palouse, NE Washington, and No RTPO – San Juan Islands

# Regional and Metropolitan Transportation Planning Organizations

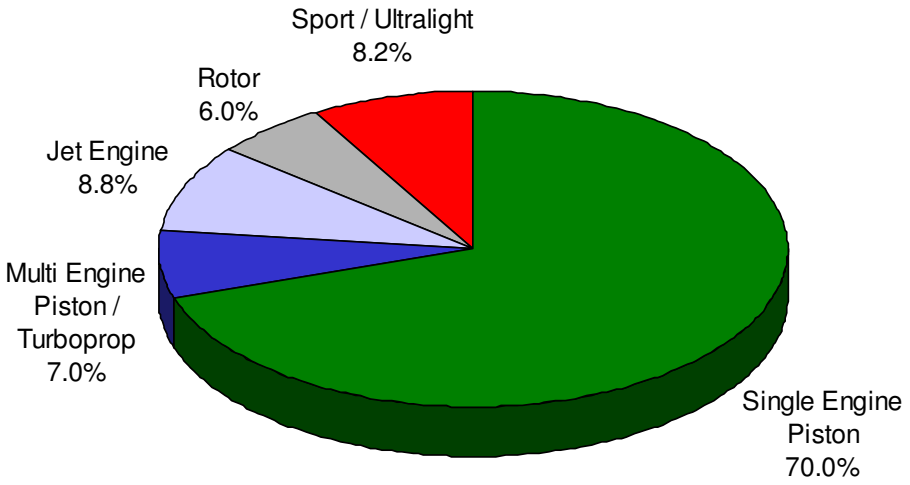


# Forecast fleet mix for Washington State

**Forecast Washington GA Fleet Mix**
*2015*




**Forecast Washington GA Fleet Mix**
*2030*

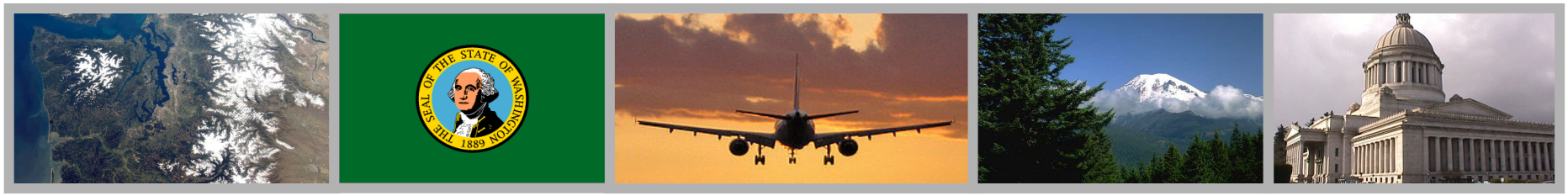


# Summary of Key Findings

- Between 2005 and 2030, Washington's based general aviation aircraft are forecast to increase from 8,100 to 11,800, representing total growth of 45% (1.5% AAG)
- Washington GA aircraft operations will grow from 3.0 million to 4.5 million at a rate of 1.7% annually.
- Jets will be the fastest growing segment of GA activity in Washington, as in the nation as a whole.
- The Puget Sound will remain the region with the highest concentration of GA activity (46% of based aircraft in 2030)

# Summary of Key Findings cont.

- Other significant concentrations of GA activity in Washington include Spokane (6.5% of 2030 based aircraft), Benton-Franklin (5.7%), and Quad County (5.6%)
- The fastest growing regions for GA activity include Thurston (2.1% growth in based aircraft), Southwest Washington RTC (2.0%), Quad County (1.9%), Peninsula (1.8%), and Northeast Washington (1.8%)
- Regions with comparatively slow growth are forecast to include Palouse (0.7% growth in based aircraft), and Yakima (0.7%)



## *Regional Phase II Workshops*

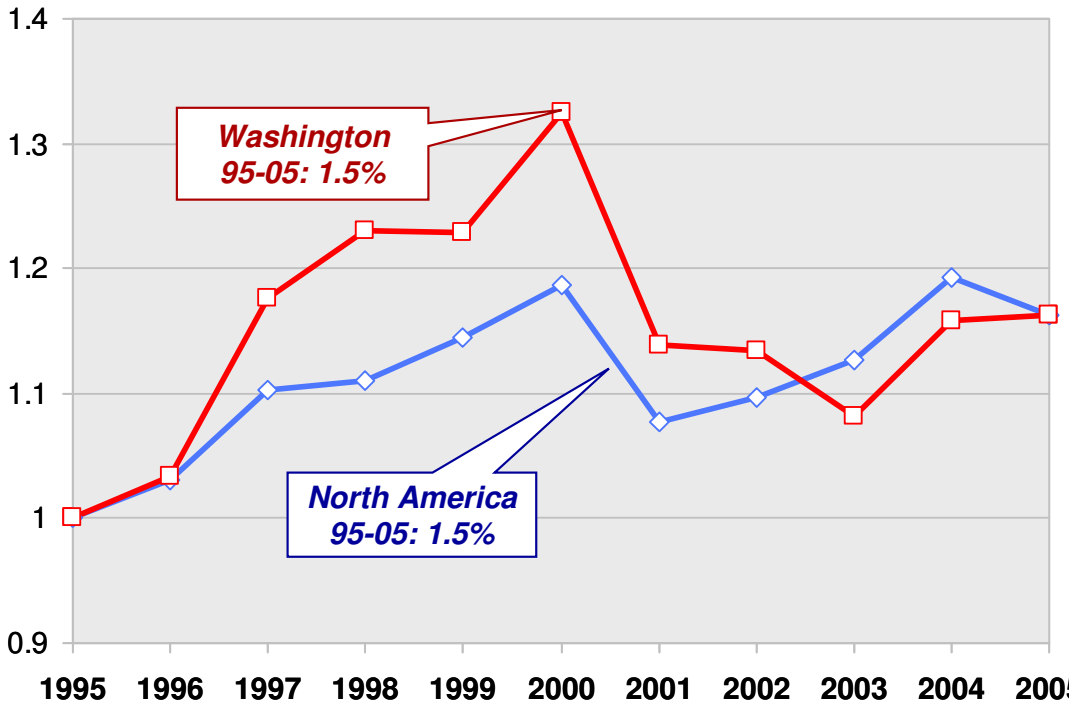
# AIR CARGO FORECASTS

# Air Cargo Activity Encompasses Three Components

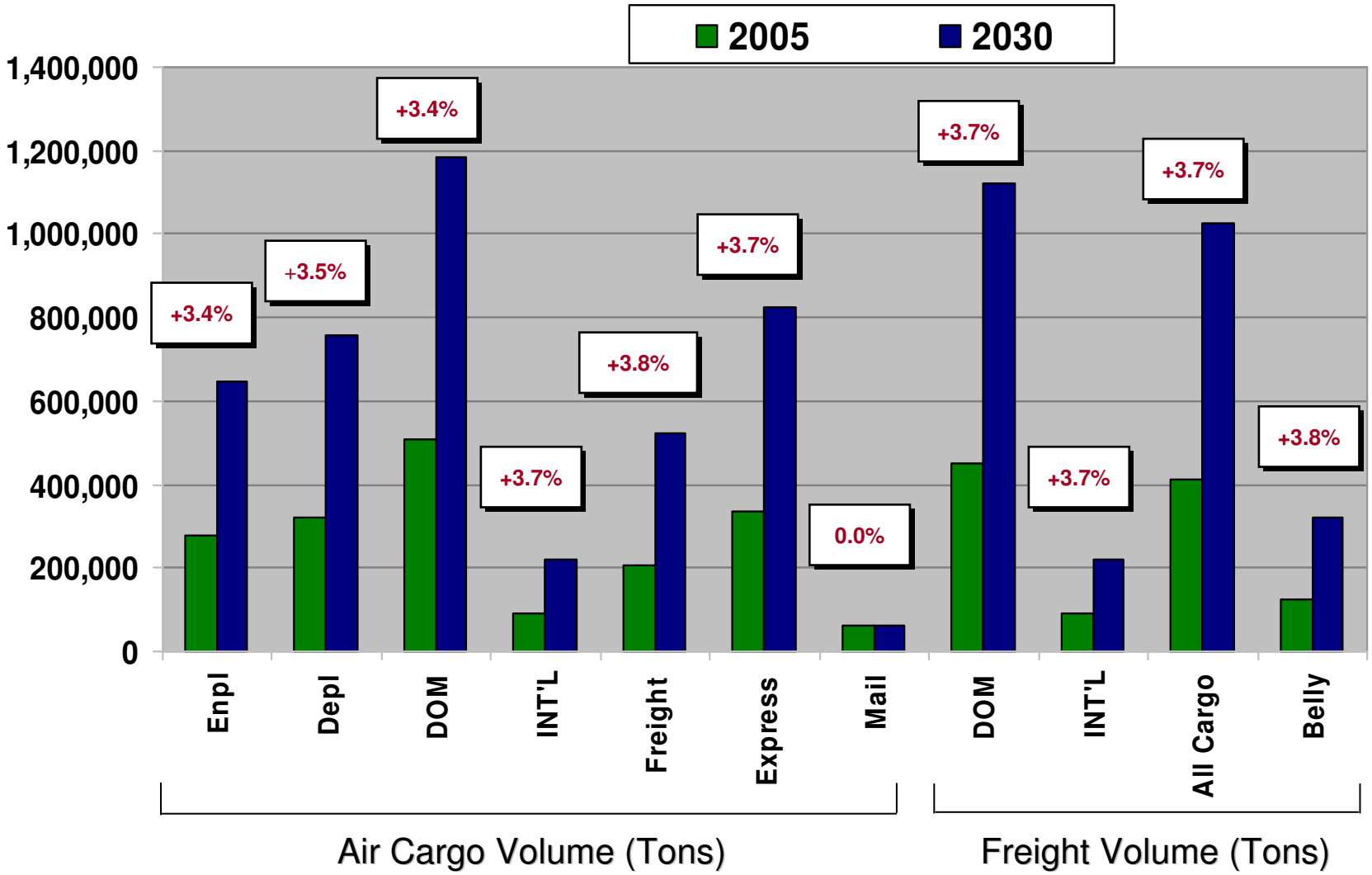
- **Air cargo activities predominantly include:**
  - Freight: all-freight airlines and "belly" shipments in scheduled psgr flights, Examples: Kitty Hawk, Atlas, Gemini, Kalitta, EVA Air, passenger flights.
  - Express Freight: integrated express - DHL, FedEx, and UPS, principally overnight/deferred envelopes, pouches and boxes, some larger freight
  - Mail: air mail carried in belly of commercial planes and as freight by FedEx under contract with USPS
- **Forecasts developed included each type of "cargo"**
- **Air cargo in WA is Performed by Four aircraft type/capacity:**
  - Large widebody – 76 or more tons
  - Medium widebody – 25 to 75 tons (8,600 ops in 2006)
  - Narrowbody – 11 to 50 tons
  - Small – up to 7 tons (36,000 ops in 2005)

# Washington's Growth Has Tracked the US Average

- **Air freight in Washington and in the US overall has grown at a rate of 1.5% per year over the past ten years**
- **Washington's overall growth is forecast to follow the US average at 3.8% annually, based on the Boeing forecast**

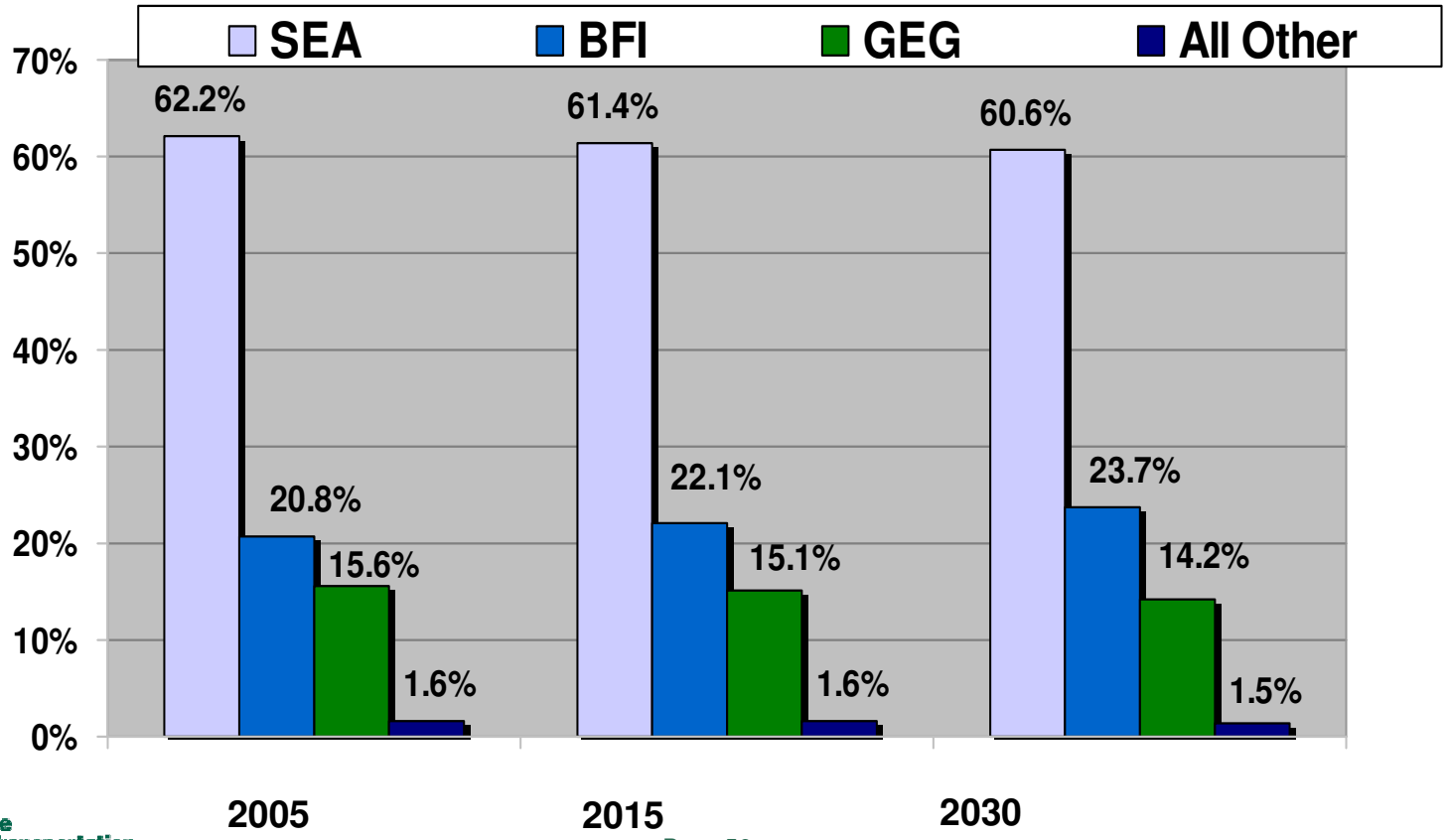


# Air Cargo Will Grow From 601,000 to 1,400,000 Tons by 2030



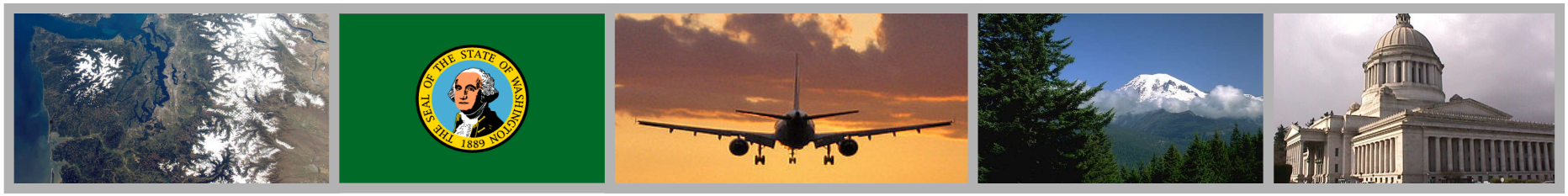
# Air Cargo Will Remain Concentrated in Seattle and Spokane

- Thru 2030, SEA and BFI will continue to drive the bulk of air cargo tons in Washington, at 84% in 2030 and 83% in 2005
- Spokane's share will decrease slightly from 16% to 14%



# Aircraft Operations Will Remain Concentrated in Small Aircraft

- **Operational forecasts indicate all-cargo aircraft operations will increase from 51,314 to 74,739 annually thru 2030**
  - Large widebody: from 1,056 to 2,872 annual operations
  - Medium widebody: from 8,590 to 18,099 annual operations
  - Narrowbody: from 5,967 to 9,388 annual operations
  - Small: from 35,701 to 44,380 annual operations
- **The Largest Increase will be in Medium widebodies (9,500), the Greatest Share Remains with Small Planes (60%)**
  - Medium Wide body – MD11, L10, B767, A300



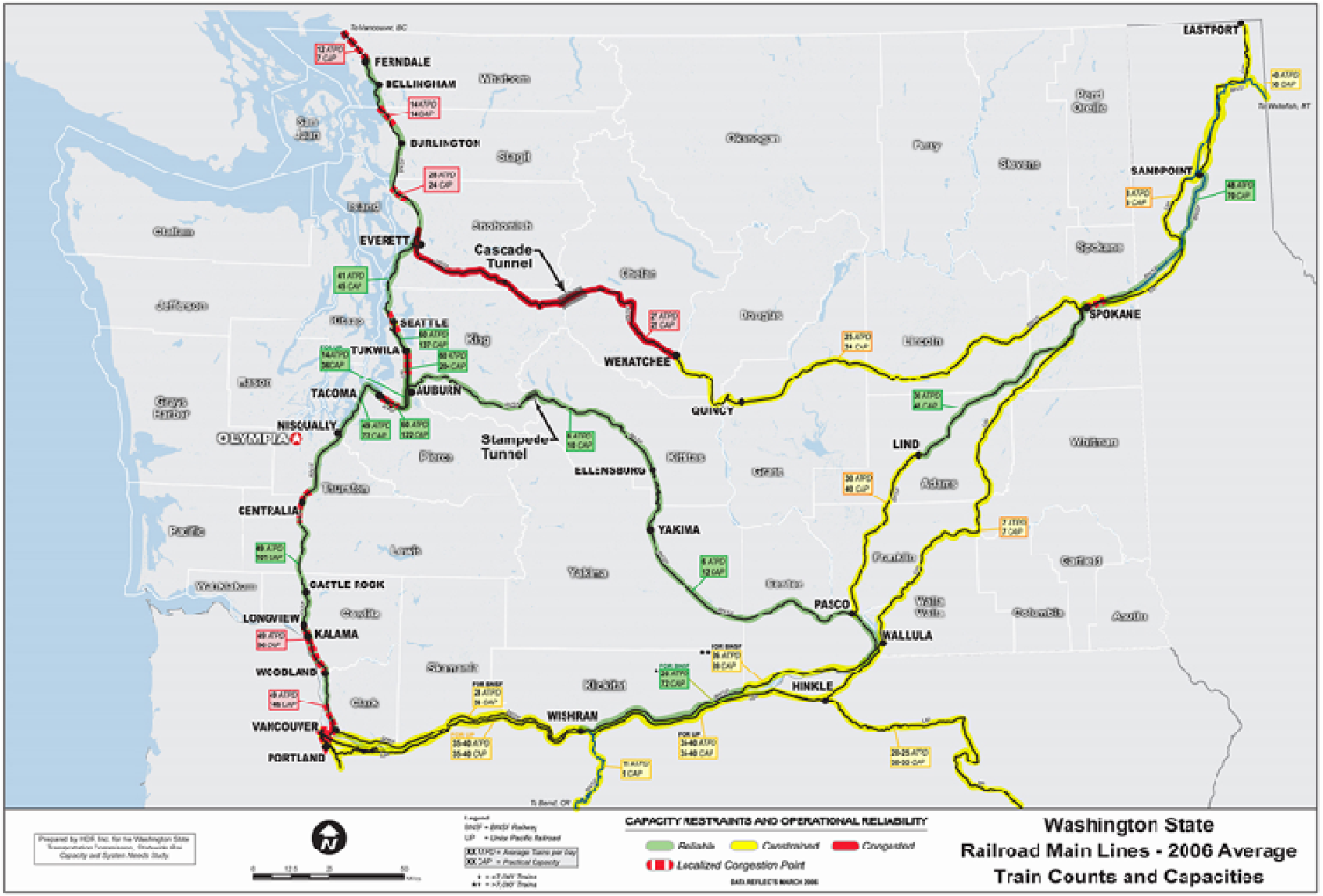
*Regional Phase II Workshops*

# HIGH SPEED PASSENGER RAIL

# High-Speed Ground Passenger Transportation Facilities and Services

- **Can high-speed ground passenger transportation development/investment help Washington's aviation system?**
  - Can it be a viable alternative to flying for some city pairs?
  - Can it provide improved airport access and connectivity?
- **Two analyses**
  - Feasibility assessment of high-speed ground transportation development opportunities
  - Demand estimates for feasible high-speed ground transportation links

# Washington State Rail Line Capacity



# Washington State Intercity Rail Service

## Amtrak Empire Builder



## Amtrak Coast Starlight



## Amtrak Cascades


# Conclusions – High Speed Rail

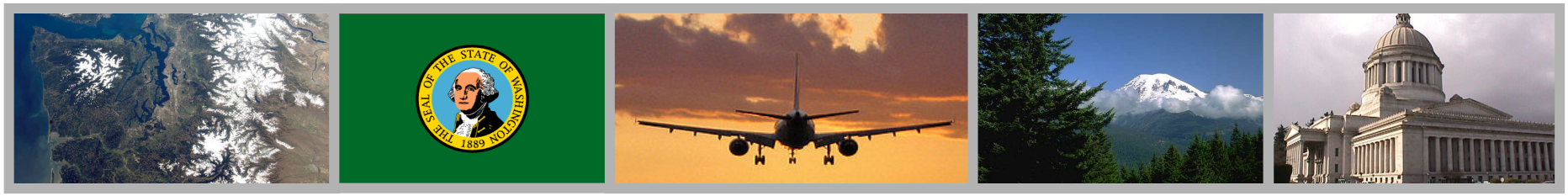
- **WSDOT's Plan to further develop the Amtrak Cascades line are achievable and may provide complementary and connecting service to congested air passenger transportation system**
- **However, the Planned High Speed Rail Service will Not Provide Meaningful Relief to SEA-TAC**
  - Local Demand to Portland and Vancouver, BC does not represent significant share of overall SEA O&D traffic
  - Even with Planned Improvement to Portland and Vancouver, BC, Rail Travel Times will Not Effectively Compete with the Automobile
- **The one other corridor where rail service implementation may become feasible is between Seattle and the Tri-Cities, and reasonable potential ridership would be expected**

# LATS Phase II Next Steps

- Future Airport Capacity Estimates
- Compare Future Demand and Capacity, Identify Shortfall in Airport System
- Develop Scenario's to Meet Shortfall in Airport System
- Final Report by July

# Discussion

- What are the key issues/implications for local communities, given the findings from Phases I and II?
- What are the implications for long-term state aviation planning?
- Do you have suggestions as we continue to complete the Phase II technical study?
- Suggestions/Feedback for Phase III Outreach?



*Regional Phase II Workshops*

# PHASE III NEXT STEPS

# Governor's Planning Council: Purpose

- **Use Phases I and II findings to:**
  - Recommend how to best meet statewide commercial and GA capacity needs.
  - Determine regions needing facilities improvement regarding matching of existing/projected airport facilities and the long range capacity needs of airports within the region expected to reach capacity before the year 2030.
  - Recommend potential future commercial and general aviation airport facilities designed to meet the need for improved aviation planning in the region.
- **Include public input in making final recommendations**
- **Submit recommendations to appropriate legislative standing committees, the Governor, the Transportation Commission, and applicable RTPOs**

# Governor's Planning Council: Composition

- Member of the Transportation Commission
- WSDOT Aviation Director
- Director of Community Trade and Economic Development (CTED)
- Federal Aviation Administration (FAA) technical expert
- Commercial airport operator
- Member of the Growth Management Act (GMA) hearings board
- Washington Airport Management Association (WAMA)
- Airline representative
- Two members of the general public

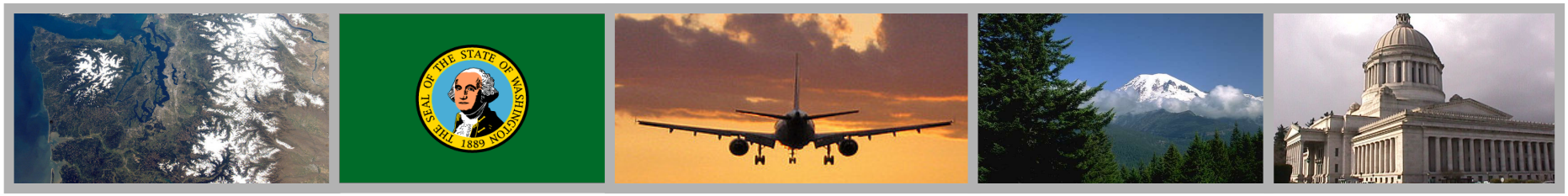
# Proposed Timeline

- **May 2007**
  - WSDOT recruitment of council members.
- **June 2007**
  - Submit final recommendations for Governor's consideration by the end of the month.
    - *Must include 2 to 4 members from each group (includes alternates).*
- **July 1 2009**
  - Final Report and recommendations due to: legislature, governor, Transportation Commission and regional transportation planning organizations.

# Outreach

- Aviation News Service – Subscribe: aviation@wsdot.wa.gov
- Quarterly Newsletters
- Regional Meetings and Briefings at Statewide Aviation Association Meetings
- Stakeholder Interviews in Phase I
- Online survey – Phase I and II - Currently in Progress

***LATS Web site: WWW.WSDOT.WA.GOV/aviation***



*WASHINGTON STATE*
*Long-Term Air Transportation Study*
*Regional Phase II Workshops*
*(2nd Series)*

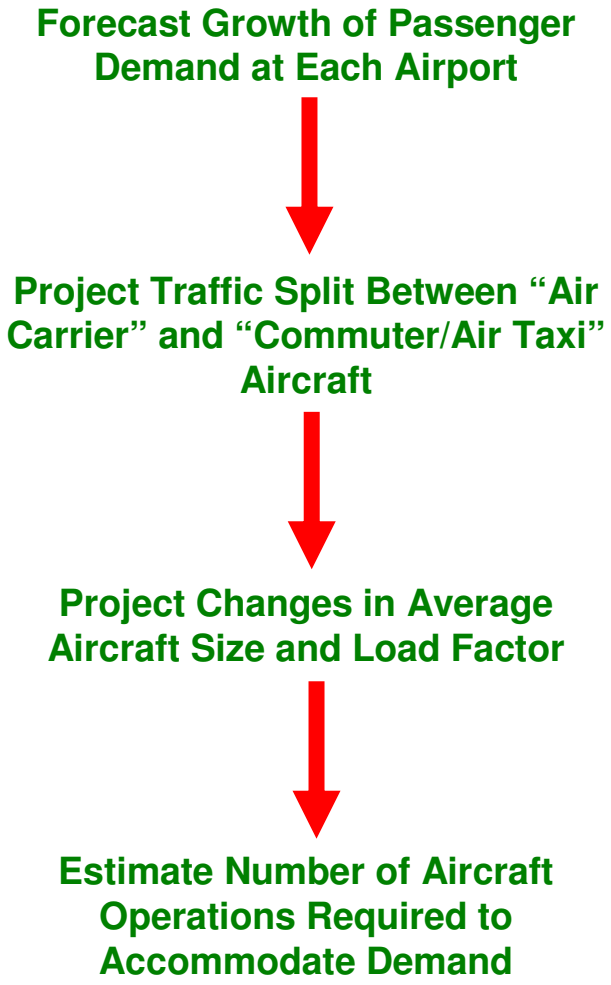
# Technial Appendix: Methodology and Approach

# Objectives and Scope of Commercial Forecasts

- **The Study Addresses 20 Commercial Service Airports in Washington State**
  - SH&E Prepared Forecasts for 17 of the 20
  - At 3 Airports – Sea-Tac, Moses Lake/Grant County & Friday Harbor -- Independent Forecasts Prepared Previously Were Extrapolated to 2030
- **Objective: Project Future Traffic and Activity Levels at Each Airport**
  - Help to Determine Adequacy of Existing Infrastructure to Accommodate Future Demand Levels
- **Projections Include:**
  - Passenger Enplanements – Air Carrier & Commuter/Air Taxi
  - Aircraft Operations – Air Carrier & Commuter/Air Taxi
- **Forecast Period: 25 Years – from 2006 to 2030**

# The Forecast Approach Begins With Projections of Passenger Demand, Which Drive Estimates of Aircraft Capacity and Operations Required to Accommodate the Traffic

- **Passenger Demand Forecasts are Based on 3 Methodologies:**
  - Socioeconomic Correlation
  - Time Series
  - Traffic and Economic Growth Patterns Relative to Total U.S.
- **Evolving Air Carrier Service Patterns are a Crucial Input**
- **"Reality Check" of Projected Results by Comparing Against National and State Trends**
- **Also Assessed Potential Risk of Service Loss at Smaller Washington State Airports**



# Overview of GA Forecast Approach

- **The general aviation forecasts were developed using a top-down approach**
- **There were four primary steps in the forecast methodology:**
  1. First, total based GA aircraft in Washington State were forecast
  2. The statewide forecast of based aircraft was distributed to individual planning regions within the State
  3. The based aircraft forecasts for individual planning regions were allocated to the specific airports located within each region
  4. Finally, general aviation aircraft operations were forecast at each airport in relation to the number of forecast based aircraft

# SH&E Developed Several Methodologies to Distribute Forecast Washington State Based GA Aircraft to Individual RTPO's

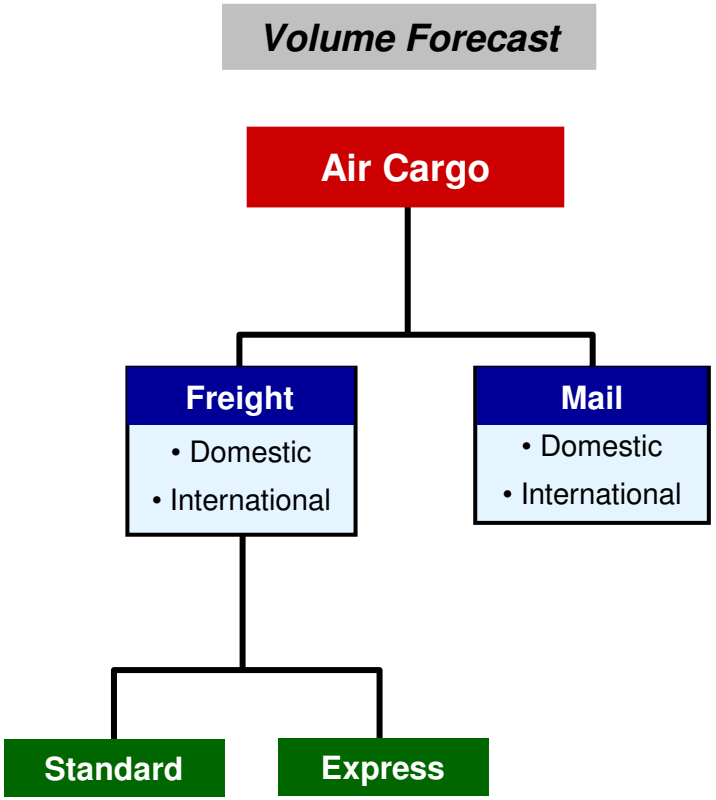
- **Share-Based Methodology: An RTPO's share of statewide based aircraft is forecast in relation to its share of statewide economic activity (population, personal income, employment)**
- **Relative Socioeconomic Growth: Differences in forecast RTPO socioeconomic growth rates are used to project differences in based aircraft growth rates**
- **Historic Trend-Based Forecast: The relationship between historic based aircraft growth and socioeconomic growth for individual RTPO's is used to forecast future growth in based aircraft from forecast socioeconomic growth**
- **Historic Trend in RTPO Growth vs Washington State: Future growth by RTPO is forecast based on the historic differentials in socioeconomic and based aircraft growth rates, and the projected differentials in future socioeconomic growth**

# The Preferred Methodology Forecasts GA Aircraft Growth Rates by RTPO Based On Relative Rates of Socioeconomic Growth

- The economy is the principal driver of general aviation growth
- RTPO's that are forecast to exhibit the fastest socio-economic growth are also forecast to achieve the fastest growth in based aircraft
- This approach produces positive GA growth rates for all RTPO's through 2030
- In order to smooth RTPO based aircraft growth rates from historic to forecast periods, SH&E incorporated the historic growth trend along with the socioeconomic growth forecast in developing RTPO forecasts for the 2005-2010 and 2010-2015 periods.

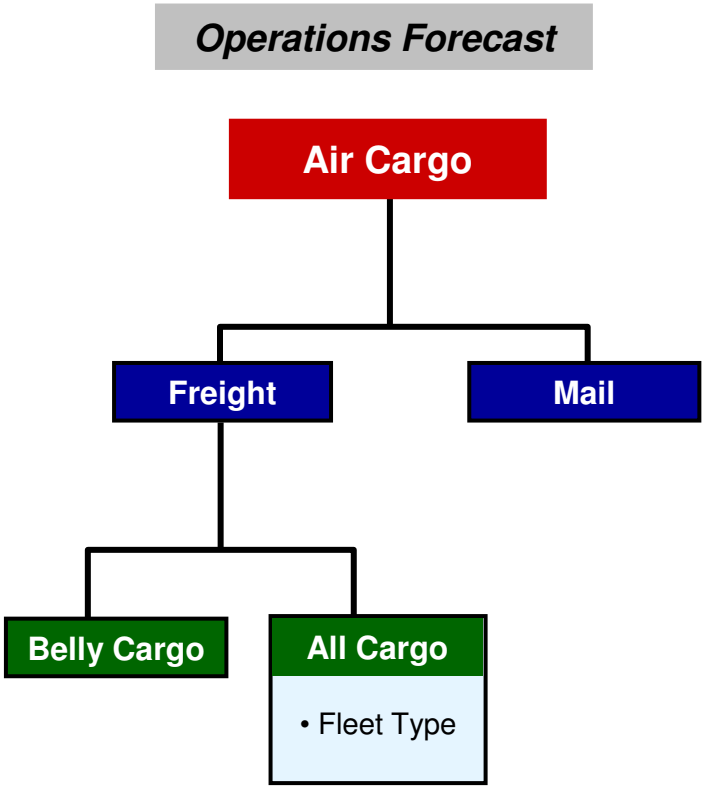
# Air Cargo Forecast Development Pursued Two Paths – Volume and Operations

- **Air freight tonnage analysis was airport specific, reviewing freight and mail**
  - Air freight
    - *Domestic*
    - *Asian*
    - *European*
    - *Other international*
    - *Enplaned and deplaned*
  - Air mail
    - *Domestic*
    - *International*



# Air Cargo Forecast Development Pursued Two Paths – Volume and Operations, continued

- **Operations analysis focused on air cargo flight operations by airport by aircraft type**
  - Carrier
  - Aircraft type
  - Grouping of aircraft type by size category
    - *Large widebody*
    - *Medium widebody*
    - *Narrowbody*
    - *Small*
- **Identification and removal of mail and belly cargo**



# Baseline Tonnage Reviewed to Develop Air Cargo Forecast

- Historic Washington air cargo growth analyzed and compared to US air cargo growth to determine proportionate growth
- Where possible and meaningful (SEA) key submarkets of growth were analyzed in comparison to US growth for those submarkets to determine proportionate growth (e.g. Europe, Asia)
- Global air cargo industry forecasts reviewed to develop appropriate US and submarket growth rates
- City-specific economic indicators reviewed (e.g. income, population, employment) to develop proportional growth rates
- Historic growth, industry forecast, and city-specific growth rates blended to develop city-specific air cargo forecasts

# Region-Specific Growth Rates Developed for Select Markets

- **Region-specific growth rates were developed and applied to certain markets where meaningful differentiation could be made to forecast growth**
- **Europe – Washington Air Freight**
  - Historical: 1.2%, Go-Forward: 2.1%
  - Industry Historical / Go-Forward: 3.2% / 5.4%
- **Asia – Washington Air Freight**
  - Historical:3.5%, Go-Forward: 4.5%
  - Industry Historical / Go-Forward: 5.5% / 7.1%

# Airport-Specific Growth Rates Reflect Economic Strength

- **For each of the 10 airports forecast, local economy-based specific forecast adjustments were developed**
- **These adjustment "multipliers" were applied to the Washington proportional state-level growth rate previously developed to further refine growth forecasts to each city**

| Airport | RTPO | Economic Growth | | Air Freight |
|---|---|---|---|---|
| | | CAGR | Ratio to State | Volume Growth |
| SEA/BFI | Puget Sound Regional Council | 3.2% | 1.04 | 3.9% |
| BVS | Skagit/Island | 2.3% | 0.74 | 3.8% |
| BLI | Whatcom Council of Governments | 3.0% | 0.96 | 3.7% |
| PSC | Benton-Franklin-Walla Walla | 3.1% | 0.99 | 3.7% |
| CLM | Peninsula | 2.4% | 0.76 | 3.6% |
| MWH | Quad-County | 2.4% | 0.78 | 3.0% |
| EAT | North Central | 2.5% | 0.80 | 2.9% |
| GEG | Quad-County/Spokane Regional Transportation Council/Northeast Washington | 3.1% | 1.01 | 2.9% |
| YKM | Yakima Valley Council of Governments | 3.0% | 0.98 | 2.8% |
| **State Total** | | **3.1%** | **1.00** | **3.8%** |